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ABSTRACT

There are several reasons why appraisals of school sites are necessary--the reasons run the range from the importance of performing a postoccupancy review to examining the need for new facilities. This guide helps educators and community leaders, as well as technical experts in school facilities, to complete the process of school facility appraisal. The appraisal criteria are categorized into six areas: (1) the school site; (2) structural and mechanical features; (3) plant maintainability; (4) school building safety and security; (5) educational adequacy; and (6) environment for education. Each of the six criteria is discussed at length in the first section of the guide, with an emphasis placed on the most important aspects of each. The second section includes specific directions for the appraisal of school facilities. Checklists are provided that incorporate each of the six elements mentioned above. A rating scale is also provided to further aid in accurate appraisal. The appraisal instruments are adapted for use at each of the three educational levels: elementary, middle, and high school. A glossary is appended. (37 references) (LAP)

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SCHOOL
FACILITY
APPRAISAL

EA023 914

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Guide for School Facility Appraisal

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1992 Edition

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H.L.H.

H.E.L.

About the Authors

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H. Edward Lilley, Ph.D. grew up in an atmosphere of the building trades and has worked as a carpenter, plumber and electrician. He has a doctoral minor in Architecture. His professional career includes public school teacher, principal and regional superintendent. He is currently a professor of educational administration at West Virginia University where he held major responsibility for teaching the Administration of Educational Facilities for sixteen years. He is widely published in national and international journals, has served several times as issue editor and has chaired the Editorial Board for The School Planner. He currently serves on the Board of Directors of CEFPI.

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Introduction

The *Appraisal Guide* was developed initially in 1986 to meet the need for a comprehensive method for measuring the quality and educational effectiveness of school facilities. Its use is not to determine the insurable value of a building as in a financial appraisal.

The appraisal criteria are categorized into six areas: The School Site; Structural and Mechanical Features; Plant Maintainability; School Building Safety and Security; Educational Adequacy and Environment for Education. The appraisal instruments are adapted for use at each of the three educational levels; elementary, middle, and high school. To the extent possible, non-technical language is used throughout so that the process of appraisal might be accomplished by educators and community leaders as well as by the technical experts in school facilities. Persons using the instruments need a general knowledge of the educational program, the operation of a physical plant, and the state/national standards for educational facilities.

The *Appraisal Guide* was developed with the assistance of educational facility planners in the United States and Canada. Graduate students in several universities assisted in pilot testing the materials.

The appraisal process achieves appropriate reliability through the development of a team consensus for each of the items. Training and initial experience in appraisal of facilities has led to team consistencies well within the 10% range of variance.

The 1992 edition of the *Guide for School Facility Appraisal* provides several essential improvements. The criteria and instruments have been updated to reflect the research developed by the Interface Project and the AIA Committee on Architecture and Education, i.e., there is a definite relationship between school facility and student learning. The last two categories, Educational Adequacy and Environment for Education, have had major revisions to provide more appropriate educational rationale for the assigned ratings.

The items in the instruments are redesigned to be more generic to the three educational levels. With some slight variations in the wording, the items are identical within the three instruments. A significant change has been made in the points allocated to an item in each of the levels. For example, at the elementary level the maximum weight given to an academic classroom is higher than at the middle school and high school levels. More weight has been given, however, to special learning spaces at the secondary level than at the elementary. The instruments reflect more accurately the differences in the educational program and its need at the three levels of instruction.

Format changes make the *Guide* easier to use. The layout of the criteria section has been improved. The instruments now use bold type for key words and generally the items that receive the most weight are provided at the beginning of each of the six categories. There has also been a slight reduction in the number of items. The metric scale has been provided for the building dimensions.

Use of the Appraisal Guide

Persons taking part in a comprehensive school facility appraisal often say they will never again look at a school building in the same way they did prior to that experience. Features or conditions often previously overlooked become readily apparent.

The most acceptable method of using the appraisal materials is to have a small team of consultants thoroughly familiar with the Guide train the principal and/or local administrators in its use. The local administrator(s) should then conduct the appraisals.

To Perform a Post-Occupancy Review

It is customary for architects and school district administrators to assess the adequacy of a new structure after it has been in use for a brief time, six months to a year. Such a review attempts to determine, for example, which of the design features function as intended. For example, it is essential to determine if the physical plant adequately serves the instructional program. Also, the review should determine if construction materials are displaying any problems of maintainability. If the post occupancy review focuses as it should, on the congruence between the users' needs and the characteristics of the new structure, the instruments in the Appraisal Guide will serve a useful purpose. Increased emphasis should be given to post-occupancy review of all new construction.

To Formulate a Permanent Record

Superintendents of Buildings and Grounds, especially in larger school systems, are often expected to maintain files that will provide definitive information about each building under their responsibility. The careful completion of the Appraisal Guide, even when done by one person will provide a useful administrative record and at the same time reveal correctable problems that may have been previously overlooked. Annual appraisals over four or five years by local administrators is a good plan. The consultant team referenced above might then be asked to return and identify and correct bias or mistaken rating. The profile of early appraisal placed consecutively on transparencies will provide trend information on facility deterioration or inadequacy due to program changes. In this way the administration can plan, well in advance, the need for remodeling or replacement based on its own minimum scales.

To Highlight Specific Appraisal Needs

Although the Appraisal Guide is a comprehensive instrument, it can be used for specific appraisal needs. The School Site criteria, for example, may be utilized separate from the total guide for rating an existing site or for the consideration of new site acquisition. The School Building Safety section also may be used for a specific analysis of the safety features desired in every school building. Because the review of safety conditions is an important continuous need for school personnel, the Guide was designed so that school safety could be a separate consideration rather than intermingled with all portions of the Guide. Likewise, other sections of the instrument can serve specialized needs of a school system.

To Examine the Need for New Facilities

The use of the Appraisal Guide by a citizens committee (along with school personnel) can be an essential preliminary step to the development of a new school building program. The degree of building obsolescence can be dramatically presented through the format of the completed appraisal. The appraisers themselves can be helpful advocates in the community to explain existing inadequacies.

To Evaluate the Need for Renovation

With school enrollments beginning to stabilize and/or the problem of population shifts, some school districts are no longer in need of new schools to meet growth conditions. In the future the trend toward school renovation may be expected to increase. The Appraisal Guide can serve as a useful tool in determining the feasibility of remodeling the building as a means to better serve the program needs. Buildings that are appraised as Satisfactory or Borderline may be appropriate for careful study in terms of renovations rather than abandonment.

To Serve as an Instructional Tool

An effective method of teaching about the school plant is to utilize field-oriented experience. University classes wishing to bring students into direct consideration of the relationship between school facilities and the instructional program will find the Appraisal Guide and the appraisal process a useful and challenging instructional tool. The criteria provides a range of school building factors which serve as appropriate instructional material for graduate students in educational administration and architecture. The group activity of facility appraisal can stimulate and motivate students in a manner not found with other instructional modes.

Developing a Facilities Report

Purpose of Report

Regardless of the reasons for facility appraisal, a final report should be developed to help administrators and board members make decisions regarding the future of the specific facility. The data must be presented in a format that is easily read, both as a composite and in its separate parts. Information must be presented accurately and clearly for all readers. Summaries may be located at the beginning of various sections, and composite data may be placed into graphs for easy reference. More important findings may be listed as "Strengths and Weaknesses" for each section and specific "Recommendations" may be listed either by section or for the entire facility.

Contents of the Report

Each report should include information that justifies its validity, the process utilized in deriving conclusions, data and conditions of appraisal, description of facility purposes, findings of appraiser(s), recommendation and pertinent bibliographic data. A suggested outline is presented for consideration. With slight variation, it could be used for a final report for any of the six uses of the Appraisal Guide listed previously.

Suggested Outline

I.	*Forward*	Identify facility, instrumentation and purpose
II.	*Appraiser(s)*	Qualifications (of each)
III.	*Setting*	Location, community description, educational setting, program desired (including district and school philosophies, curriculum, etc.)
IV.	*Appraisal*	Summary Graphs Six Sections: Summary Statement Criteria (State and National Sources) Findings (Strengths and Weaknesses) Appraisal Form Recommendations (Prioritized)
V.	*Conclusions*	Composite Recommendations (i.e., closure or redefined usage)

Consensus Required

When more than one person is involved in the appraisal process, consensus is required on each item of the appraisal guide and on the contents of each statement contained in the final report. This can only be accomplished through group reading and discussion of the report, section by section.

Trends in Design and Construction

The *Guide for School Facility Appraisal* has been developed for use with a wide range of educational facilities. Its versatility is an asset, but its application to older buildings as well as new sometime causes questions of interpretation of standards and conditions. It may be helpful to keep in mind current trends that are affecting the acceptable range of quality conditions in school buildings. The following commentary presents a partial listing of trends.

The Interface Between Facilities and Learning

During recent years most educators have begun to acknowledge that the building and the physical environment have a potential to affect student learning. The Interface Project, directed by Harold L. Hawkins, at Texas A&M University, has utilized the contributions of a national task force to increase the awareness of the educational importance of the physical structure.

In a similar vein, the American Institute of Architects Committee on Architecture for Education has conducted research on the manner in which the building contributed to effective learning. That important research has been under the leadership of Gaylaird Christopher, AIA.

The bottom line in the evolution of school buildings is, as perceived in terms of today's education as well as for the 21st century, "How does the total building share in the process of learning?" The criteria and the appraisal instruments in this publication reflect this significant interface.

Gross Square Footage

New forms of instruction require greater amounts of space than in the past. Special education, remedial classes, cooperative learning, and community participation all create spatial requirements that differ from earlier periods of education. One of the measurements for size of schools is gross square footage — the total amount of space within exterior walls. The gross square footage can be used to determine building capacity with this formula: total building square footage divided by gross square footage per student equal building capacity. This type of change might be shown as:

Gross Square Footage per Student

	Elementary	Middle	Senior High
Traditional	70	90	110
Current	90	120	145

Technology Education

Computers and television are making a significant impact on academic learning as well as the vocational areas. Retrieval of information (data bases) and the application of information create very different learning environments from those utilized in the past.

Computers are being used in laboratory settings and in regular classrooms. New installations in a few schools begin to suggest that computers will aid in the applied learning for most students. New spatial arrangements are being created for this type of instruction.

Teacher Professionalism

In most school buildings today, the professionalism of teachers is inhibited by the physical structure. New schools are providing space for teacher group planning, access to communications devices such as telephones, computers, and amenities, including well furnished teacher lounges and work rooms. Building designs should foster teacher dialogue and sharing rather than assuming that teachers spend most of their time isolated in a single instructional space.

Building Features

These features are becoming commonplace in the ideal educational environment:

1. Use of some windows, at least one per instructional area
2. Sloped roofs lessening the problems of roof leaks
3. Security devices to limit vandalism and break-ins
4. Spaces for student dialogue including informal seating arrangements
5. Safer playground equipment designed to utilize findings from studies in psychology
6. Spaces designed to give students (and teachers) brief interludes from large groups — personal space for occupants of the learning environment.

Desirable educational spaces should reflect many of these trends if appropriate learning is to take place.

1.0 The School Site

A school site is more than merely a building location. It is an integral part of the school facility and one of the basic tools in the educational process. The planned educational experiences as well as many community functions will be enhanced or limited, by the adequacy of the school site. Therefore, the selection and development of the site should be undertaken with great care. The criteria for selecting a site should be sufficiently broad and flexible to allow for the character of the school district and the nature of the educational program. In considering an existing or prospective school site, attention should be directed toward this location and potential for the identified educational and community needs.

1.1 Site is large enough to meet educational needs defined by state and local requirements. (25)

Most state education departments either mandate or recommend the minimum number of acres needed for the specific grade levels. Typical current acreage specifications are:

Elementary School
10 acres plus one acre for each 100 students (4.05 ha)

Middle School
20 acres plus one acre for each 100 students (8.10 ha)

High School
30 acres plus one acre for each 100 students (12.15 ha)

According to the American Institute of Architects State Requirements Survey, nearly one-third of the states use the above guideline. Several states have no standards for the size of school sites. Where land acquisition is excessively costly, state departments usually concede somewhat more restrictive acreage allowances. Appraisals of site size should give consideration to the nature of the program requirements, but full credit should not be given for sites smaller than the ideal referenced in this criterion. A scoring of satisfactory may be given if state minimums are met.

1.2 Site is easily accessible and conveniently located for the present and future population. (20)

A central location is especially essential at the elementary and middle school levels. Although most school districts no longer find the neighborhood school concept feasible, it continues to be helpful if significant numbers of students attend a school in their immediate residential area. Closeness of the school to student populations also minimizes parental and bus transportation. For high school students it is expected that most will be bussed or will provide their own transportation. In developing communities (or in declining ones) the use of a stick-pin map to locate student homes is an effective method of visually determining the degree of centrality for any site. (Computerized mapping can make this method more easily accomplished.) The following are considered maximum walking distances for school attendance: elementary—one mile; secondary—two miles. Maximum riding time on school buses is generally accepted as: elementary—30 minutes; secondary—60 minutes.

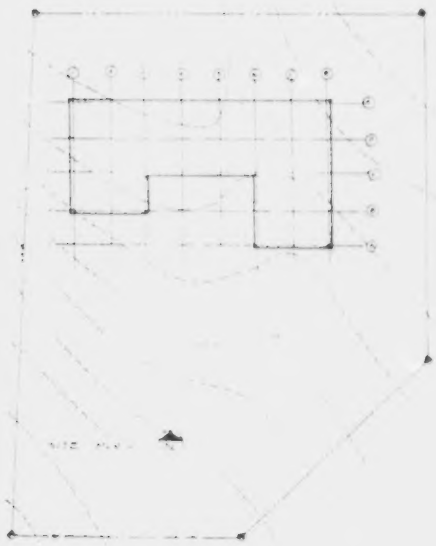
1.3 Location is removed from undesirable business, industry, and traffic. (10)

The surrounding environment should be compatible with educational needs and development. Safe and healthful conditions are very essential for students and teachers. Areas where there is danger of pollution or explosion should be avoided. Concern should also be given to areas where toxic waste or radon gas might be present. Schools are best located where there will be no adverse affects from industrial smoke, dust or odors. A site free from disturbing noise pollution, e.g. trucks, railways, and airline traffic, is preferable. Proper zoning restrictions can help protect the school environment. Most states have laws that limit the proximity of liquor and pornography establishments to schools. The criteria cited here apply generally to schools regardless of grade level. Because of the acreage required for senior high schools, it is somewhat more difficult to avoid proximity to all undesirable factors.

1.4 Site is large enough for future expansion, if needed. (5)

This criterion is an extension of item 1.1. Note carefully the information provided on that item. Then determine if there is any evidence which suggests that the site might be suitable for an increased enrollment. In any circumstance where the attendance area is fully developed in terms of population provide full credit in the appraisal. Likewise full credit is due if enrollments are declining. Partial credit is allowable if adjacent land for site expansion is readily available. No distinction need be made on this item for the specific building grade level.

1.5 Topography is varied enough to provide desired appearance but without steep inclines. (5)



The site should have an elevation and contour which will insure good drainage and yet avoid soil erosion, especially over the full life of the building. Steep inclines, however, may create construction problems and increase site development costs. Fault areas and mine subsistence areas should be avoided. Natural variations in topography can add greatly to the aesthetic beauty of the site and challenge the architect to a modest creative orientation of the building with the surroundings. Topographical considerations should receive equal concern regardless of whether the building serves elementary, middle, or high school students.

1.6 Site is well landscaped. (5)

Attractive landscaping is an asset to every school building. The site should support plant life, natural vegetation, and trees without undue effort. A school building is one of the most effective public relations tools. The image of the school should be a positive one for those who attend, work at, or visit. The school should appear attractive to those who merely have reason to pass by. The landscaping is an important part of that image. Parent and student groups often can assist in improving the landscaping arrangements. Care should be taken, however, to assure that provision is made for continued maintenance of plantings and shrubbery. Smaller structures, such as elementary schools, are more easily landscaped. Sometimes at high schools the landscaping can best be limited to foundation plantings at what is considered the main entrance to the facility. Ideally one looks for comprehensive efforts that create a parklike appearance throughout the site.

1.7 Site has stable well drained soil free of erosion. (5)

The type of soil (rocky, sandy, etc.) and its drainage, fertility, and stability are important. Some schools are necessarily located in lowlands where drainage is difficult to obtain. In those instances, the building should be placed at an elevation at least sufficient to have water run away from the structure in all directions. For any school facility, especially when outdoor activities comprise a part of the day, good drainage is not only an appearance factor but also a cost factor affecting the daily care of the building. Some authorities consider the site drainage matter as relevant to the number of school custodians needed to keep the building appropriately clean on a daily basis. In scoring this item, regardless of student age, look carefully at student traffic patterns for all areas on the site.

1.8 Site is suitable for special instructional needs, e.g., outdoor learning. (5)

The instructional program in most schools today extends beyond the classroom. The school site can be a valuable asset to learning. Elementary schools need space for outdoor physical education as well as informal play. For older youth, practice fields for a wide range of activities are essential. Nature trails add greatly not only to the natural beauty of the school site but to supplement science classes at all grade levels. Open water may be a hazard particularly for younger children, but if state laws and topography do not preclude this feature on a school campus, and safety features are included in the design, the instructional program and site appearance can be enhanced. Athletic fields are essential at the secondary level and need to be in close proximity to the classroom buildings to maximize convenience and supervision.

1.9 Pedestrian services include adequate sidewalks with designated crosswalks, curb cuts, and correct slopes. (5)

Both on-site and off-site sidewalks are needed for all age levels including adult employees and visitors. For young children the school site should help to create and maintain desirable patterns of safe walking. Care should be given to pedestrian and vehicular traffic flow so that hazardous crossings are avoided. Curb cuts and appropriate sidewalk slopes are legal requirements that must be provided for handicapped students and adults. (SEE INFORMATION IN 2.1)

1.10 Sufficient on-site solid surface parking for faculty, students, staff, and community is provided. (5)

The determination of an adequate amount of parking space is often a problem for school administrators and architects. The following guidelines may be used to determine an appropriate amount of parking space. Note that this determination does not serve for extensive visitor and spectator parking at school events.

Parking area criteria:

1. One space for each teacher and staff member.
2. At the high school level, review the 11th and 12th grade enrollments for the previous two years. Consider factors, such as urban vs. rural and community affluence. It is usually estimated that 50% of the older students will drive cars to school.
3. The minimum space per car should be 8 - 1/2' x 18' (2.59m x 5.49m).
4. It is fairly accurate to allow 300 square feet per car (2.79m2).
5. For the disabled allow at least one space or 2% of the total number of spaces. Each of these spaces should be 12' x 18' (3.66m x 5.49m).
6. Parking areas should have curb cuts for the disabled, if the parking area is not at ground level.

1.11 Playgrounds are separated from streets and parking areas. (Elementary) (5)

For an elementary school the playground areas are very important. At that age, outdoor activity is both physically and mentally desirable. Location of playgrounds is a major consideration when devising the site utilization plan. Playgrounds should not be adjacent to main highways and particularly not near school vehicular entrances to the site. Safety and convenience are basic to this criterion.

1.11 Intramural athletic areas are separated from streets and parking areas. (Middle School) (5)

For the middle school the elementary criteria apply generally except that the context used is directed to athletic and group games appropriate for the age of students.

1.11 Athletic areas are adequate with sufficient parking space. (High School) (5)

At the high school level the emphasis should be the adequacy and location of parking space — for student participants and spectators.

1.12 Playgrounds are well equipped and appropriate for age levels. (Elementary) (5)

Young children in elementary schools should be provided with playground equipment. Factors to be considered are location, safety and spacing. Areas with permanently installed equipment should be near the building so as to maximize accessibility for students and supervision. Safety is reflected in terms of surface materials and the hazard free nature of the equipment itself. Ground surfaces range from natural dirt to hard surface to sand or wood chip material. For small areas synthetic materials may be the most safe. Equipment should be free of sharp edges, of sound construction, in good repair, and of a design appropriate to the age of the students. Spacing of equipment should be noted. For traditional types of equipment reasonable distance should be provided between pieces of equipment. New concepts, however, reflect creative design with the use of wood, concrete and rubber. These play areas are often planned as one continuous unit so the children move easily from one activity to the next.

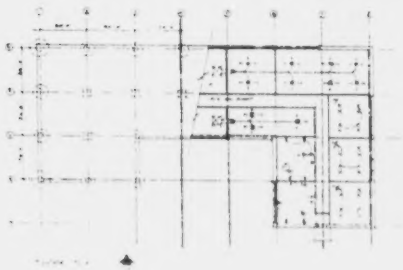
1.12 Intramural areas are provided for a variety of youth activities. (Middle School) (5)

More space is needed for the middle school students than elementary. Intramural games such as softball, soccer, touch football, etc. need extensive planned areas for the activity. For a larger school enrollment several areas may be needed for each of the activities. In some situations areas may be designated separately for boys and for girls. Attention should be given to well-developed space for a diversity of intramural games.

1.12 Streets and parking areas are well designed with solid surfaces. (High School) (5)

Although the streets and parking areas associated with the high school may not necessarily be concrete or asphalt, it is essential that such areas are smooth and solid. The amount of student and adult traffic at any high school necessitates easy and convenient access. In fact, if the parking is not paved, use of the space will be unsuitable most of the time. Driving over and parking on grass surfaces usually leads to ruts and holes which make use during wet seasons almost impossible and not much better under dry conditions. Although curved drives with landscape will provide aesthetic relief, care should be given to avoid sharp curves, excess corners, and dead-end streets.

2.0 Structural and Mechanical Features



Structural and mechanical features are basic to all functions of a school plant. These features determine future maintenance costs, capability of expansion, and feasibility of making changes to meet new requirements in education It is important that basic designs for the electrical, water and waste disposal assure sufficient capacity for present and future needs. Systems designed for minimal initial costs are invitations for future operational problems.

All designs and specifications should meet local building codes as well as state educational requirements. If, in the appraisal of the structural and mechanical features of a school facility, unusual problems are discovered advice of professionals in the construction industry should be sought. Because deficiencies in structural and mechanical design along with code violations are costly to correct, all efforts should be directed toward the prevention of construction errors. Criteria in this section are separated into structural and mechanical/electrical factors.

2.1 Structure meets or exceeds all barrier free requirements both externally and internally. (15)

Several Federal laws, including PL 90-480, "An Act to Ensure that Certain Buildings, Financed with Federal Funds are so Designed and Constructed as to be Accessible to the Handicapped;" PL 93-112, "The Rehabilitation Act of 1973" (specifically Sections 502 and 504), PL 94-142, "The Education for All Handicapped Children Act of 1975," and PL 101-336, "Americans with Disabilities Act of 1990" (ADA) have established regulations for public school facilities which must be considered in any appraisal.

Inclusively, the laws require no physical barrier to remain between mentally or physically disabled persons and programs which are available to everyone else. The American National Standards Institute, Inc. (ANSI) established standards which have helped administrators interpret the laws. Several of the more common specifications are listed below as examples. While ADA requires compliance with the Uniform Federal Accessibility Standards (UFAS), those standards have yet to be published as of the printing.

These are the basic categories that should be examined in performing an evaluation.

Basic Categories in Performing an Evaluation

Site Considerations
- Parking Space
- Curb Cuts
- Sidewalks

Changes In Levels
- Ramps
- Elevators
- Lifts

Doors
- Width
- Opening Pressure
- Threshold

Rest Rooms
- Location
- Size
- Stall Width and Depth
- Grab Bars

Floors and Halls
- Width
- Surface Covering
- Obstructions and Hazards

Seating
- Space for Wheelchairs
- Traffic Circulation

Operating Mechanisms and Controls
- Height
- Ease of Manipulations

Telephones
- Height
- Volume Control

Water Fountains
- Height
- Controls

PARKING SPACES
At least one (or 2%) of parking spaces, of 12 feet (3.66 m) width and at walkway level (or with appropriate curb cuts) must be made available nearest to main entrance.

ENTRANCES AND TRAFFIC AREAS
At least one main entrance with clear, level floor for a distance of 5'-0" (1.52 m) on either side of the door and similar extensions a minimum of 18" (.46 m) beyond the "pull" side.

Smooth, solid surface sidewalks have gradient 1:12 (.30 : 3.66) or less with level rest areas at 30'-0" intervals and (9.14) no solid projections lower than 7'-6" (2.29 m).

Hallways & aisles minimum 5'-0" (1.52 m) and ramps minimum 3'-0" (.914 m) with non-slip surface.

Ramps over 9" (.23 m) high have handrails on each side which are between 2'-6" (.76) and 2'-10" (.86) high with a diameter of 1-1/4" (.03 m) to 1-1/2" (.04) and extends at least 1'-6" (.46) beyond the last step.

ELEVATORS
Elevator cars must be minimum of 5'-0" X 5'-0" (1.52 m), have handrails on at least two sides, be automatic and have raised tactile signs at least 1/2" (.013) high beside controls located 3'-6" (1.07) from floor surface.

Elevator cars must be level with floors at stopped position.

RESTROOMS, SHOWERS AND FOUNTAINS
Entrances at least 2'-8" (.81) wide with 3'-4" (1.02 m) clearance to baffle.

At least 1 water closet with stall at least 6'-0" X 5'-0" (1.50 m) having outward opening door, 1 1/2" OD (.04) grab bars able to withstand a 250 pound (113.4 kg) load on each side at least 3' - 0" (.914 m) long and 2'-8" (.813) above floor.

At least one lavatory with minimum 2'-6" (.76 m) clearance underneath and no exposed hot water or drain pipes.

At least one wall-mounted urinal in male restrooms with elongated lip 1'-3" (.38) to 1'-5" (.43 m) from floor.

Where showers exist, at least one for each sex must be accessible, in a stall at least 3'-0" X 3'-0" (.914 m) with seat and grab bars, single-lever control.

Soap tray and controls located no more than 3'-4" (1.02 m) above floor.

Water fountain height for elementary age not over 2'-6" (.76 m). Others must be between 2'-6" (.76) and 3'-0" (.914 m).

Clearance below some fountains must be 2'-0" (.069).

COMMUNICATIONS
At least one public telephone, with push buttons and adjustable volume, available with operable parts no more than 4'-6" (1.37 m) above floor level.

Tactile information, direction and information signs located throughout the facility.

Exits and emergency systems utilize both visual and auditory signals.

SPECIAL AREAS
At least two percent of lockers in each area are accessable to wheelchairs.

All laboratories, work and study areas, have 3'-6" isles between tables, desks (1.07) and bookstacks. Work and service surfaces no more than 3'-0" (.914 m) high with 2'6" (.762 m) clearance below.

All assembly areas provide wheelchair spaces for at least two percent of users.

Climate, light and drapery controls must be no more than 4'-6" (1.37 m) above floor.

2.2 Roofs are sound, have positive drainage and are weather tight. (15)

The single most common structural problem in school buildings is roof leakage. Scarcely a school facility exists that at some time has not leaked. The roof should be weather proof and insulated to the maximum extent that reasonable cost permits. Attention to proper relief of roof areas is essential. Proper drainage should be provided by durable and adequate valleys, drains and downspouts. Downspouts and drains should connect to storm sewers. Flat roofs are usually insulated and covered with tar and gravel. Glass in the roofing is not recommended because of problems associated with control of sunlight, heat gain and loss, and cleaning. Since the early 1980s, there has been an increase in the use of pitched roofs covered with pre-finished metal or rubber (seamless).

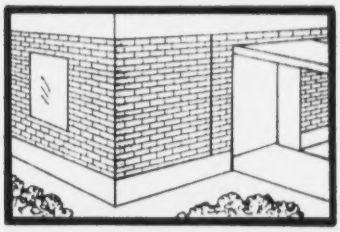
2.3 Foundations are strong and stable with no observable cracks. (10)

Exposed foundation walls can be inspected from the outside of the building. Look for masonry cracks at corners of the building. Such cracks often cut through a major portion of the exposed foundation wall. Foundation cracks may significantly weaken the structure and allow moisture to seep through the foundation. Check also where additions are attached to a previous structure.

2.4 Exterior and interior walls have sufficient expansion joints and are free of deterioration. (10)

Deterioration of building walls may include a wide range of problems. Small cracks may exist inside or outside the buildings. Mortar joints may be cracked, loose or flaking. Interior walls may have cracks, holes or plaster may be powdery. Mildew can be a problem either inside or outside the building. Walls that are stained and marked are unsightly even though not a major structural problem. Expansion joints are used in long wings of school buildings. Without expansion joints, long single building units will develop cracks due to expansion and contraction of the basic structure. The walls represent potential safety, structural, maintenance and appearance problems.

2.5 Entrances and exits are located so as to permit sufficient student traffic flow. (10)



Buildings of compact design and those of long finger-type arrangements are more functional if access is possible at each side of the building. The number of entrances will be determined by the size of the building. Normally entrances (and exits) will serve the following functions: bus transportation, parking, athletic, and other outdoor activities, fences play, emergency evacuation, visits of parents and others, deliveries and service. Corridor widths and numbers of entrances should be geared to the volume of student traffic with reasonable consideration of the functions enumerated above.

2.6 Building "envelope" generally provides for energy conservation. (10)

The Electrification Council in Washington, D.C. in its 1983 publication about energy management stressed the importance of the building envelope. It suggested five major circumstances in which the envelope aids reduction of heat gain and loss:

- Infiltration and exfiltration
- Solar heat gain through windows
- Heat loss through windows
- Heat gain and loss through walls, roofs, etc.
- Internal heat gain

Energy studies and code requirements typically address these aspects of energy management. A nontechnical facility survey can reveal at least preliminary findings that relate to the quality of the exterior of the building These materials may comprise any one or combination of: wood, brick, concrete, metal, glass or space-age plastics.

2.7 Interior is free of friable asbestos and toxic materials. (10)

Schools built during the 1930-1970 period often contain hazardous asbestos material. Such material may be in acoustical plaster, suspended ceiling tile, coverings of pipes and vents or other insulation.

Occasionally schools encounter problems of floor coverings or insulation that may, under some conditions, emit toxic fumes. School administrators and facility directors are advised to be alert to hazards of this nature which can be harmful to students and employees A Certificate of Compliance should be displayed in the principal's office.

2.8 Walls permit sufficient flexibility for a variety of class sizes. (5)

Flexibility of interior space has been a long sought factor in school buildings. At least three design eras have been experienced Historically all classrooms were expected to be the same size, large enough for 30-40 students. Advances in educational methods resulted in a realization that class sizes vary from year to year. Therefore, movable interior walls would better accommodate instructional need. The movable walls, however, were moved so infrequently that the added cost seemed unwarranted. In more recent years, the need for varying size groups for instruction has led to a purposeful designation of small, medium and large rooms in the initial design.

This item addresses the need for some variation in class sizes through any one or all of the methods referenced above.

2.9 Well maintained ceilings adequately retard sound. (5)

Ceilings, in educational facilities, are typically suspended acoustical panels, plaster (sometimes acoustical), wallboard, wood or metal. In buildings constructed since 1950, the suspended ceiling is the most common. Roof leaks frequently cause stains and discoloration of ceilings regardless of the material. Plaster ceilings cost more than the other materials but are more durable. The suspended ceilings tend to sag, bend, become dislodged, etc. On the other hand, replacement of a small number of panels is quite easily accomplished. Most ceiling materials have less acoustical value than that provided by carpeted floors.

2.10 Adequate light sources, well maintained and properly placed, are provided. (15)

Illumination in instructional areas is of major importance. For many years the tendency was to increase the quantity of light. More recent studies, however, place equal value on the quality of light. Lighting authorities disagree on whether illumination has a direct effect on learning. It is certain though that a minimum standard must be maintained to make school work possible.

The quality of light is based on several factors:

Brightness The relative amount of light available a the work surface in relation to the level of illumination in the field of view.

Glare The light which hits the work surface at the same angle as it is reflected into the eye.

Visual Comfort The ease of seeing based on fixture design and placement, amount of contrast and ceiling colors. Recommended colors are ivory, white, light beige and pale yellow.

The quantity of light has been studied carefully in recent years due to the need for energy conservation. The following guidelines are "recommended" levels provided by the Illumination Engineering Society.and the typical levels provided based on actual use in New York City schools.

Illumination Levels

	Recommended Foot Candles	Typical Foot Candles
Libraries		
Reading rooms and carrels	70	30
Stacks	30	30
Book repair and bindings	70	—
Check in and out, catalogs, card files	50	30
Offices		
Designing, detailed drafting	110	50
Accounting, bookkeeping and business machines	85	30
Regular office work, reading, transcribing, active filing and mail sorting	70	30
Corridors and stairways	20	15
Washroom	20	15
Classroom Space		
Regular classroom work	50	30
Chalk boards	100	50
Drafting rooms	100	50
Auditoriums		
Assembly only	20	15
Study hall	50	30
Laboratories		
General work	50	30
Close work	100	50
Lecture Rooms		
General	50	30
Special/demonstration/exhibit	100	50
Exterior		
Parking areas	5	5
Roadways	5	5

Maintenance of the lighting system is also of great importance. Fixtures should be located so as to permit easy replacement of fluorescent tubes and bulbs. Accumulation of dust and dirt on fixtures also greatly decreases lighting efficiency.

A light meter is necessary to determine the footcandles at desk level. A test for glare can be accomplished by placing a mirror on the desktop to ascertain if excessive light is reflected into the eyes of the student.

2.11 Electrical controls are safely protected with disconnect switches easily accessible. (10)

For large buildings on a campus where electrical service must be redistributed to several points or buildings on campus, the electric service equipment should be contained in a locked fenced area or housed in a secure building. Interior circuit panel boxes should be kept locked or in an enclosed area to which students do not have access. If circuit switch boxes are located in corridors, the boxes should be kept locked. Panel boxes should be conveniently located with disconnect switches so that power can be cut off quickly during an emergency.

2.12 Labeled electrical system is not subject to overheating. (10)

With the increased demand for electric power to operate mechanical equipment and instructional media, electrical systems in schools may become overloaded. In older buildings, the original wiring was never intended to serve contemporary requirements. It is not uncommon, even in newer buildings, to encounter problems of overload. For the non-technical appraiser, two methods may reveal the existence of this condition. Ask teachers and custodians if they have problems in their classrooms with power outages. Another technique is to test the electrical supply by turning on lights and equipment and then check breaker boxes for excess heat. Circuit breakers should never be bypassed even temporarily since the throw-out of power is intended to prevent a fire from the overheated circuit. All breaker boxes should be properly labeled.

2.13 Drinking fountains are adequate in number and placement, and are properly maintained, including provisions for the disabled persons. (10)

Regardless of grade level, drinking fountains in school buildings should be furnished at no less than 1 per 100 students. Many educators would suggest doubling that ratio. Location of fountains should be at one or more central points on each floor.

Most newer schools now provide electric water coolers. These are more easily maintained than the traditional type fountain.

Drinking fountains for the disabled should be at a 2'-6" height from the floors. In schools for older students, the source of water should not exceed a 3'-0" height.

Many elementary schools provide drinking fountains in each classroom.

2.14 Number and size of restrooms meet requirements. (10)

In all school buildings, the restrooms (lavatories) should be located in convenient areas, at least one per floor for each sex. For the lower elementary grades (especially Pre-kindergarten and Kindergarten), restrooms may be provided for each room or shared by two rooms. It is appropriate to locate restrooms and/or handwashing facilities near cafeterias. Kitchen areas must have employee restrooms provided. Although educators often refer to a restroom as a lavatory, technically a lavatory is a handwashing facility. Students using restrooms should have to pass the handwashing facility as they leave the restroom. Some schools have found the large industrial type sink located in a corridor alcove a better arrangement for supervision than having sinks placed in the restrooms. When urinals and commodes are located in an enclosed inner room, a see-through window between the corridor and the wash area is an effective arrangement for supervision of students.

Although local and state codes vary by states the following serve as a preliminary guide:

Type of School	**Number of Lavatories**	**Number of Water Closets**
Elementary School	1:30 up to 300 students 1:40 for all above 300	Boys*1:40 Girls**1.35
Middle School	Same	Boys*1:75 Girls**1:45
High School	Same	Boys*1:75 Girls**1:45

* In addition to 1:30 for urinals

** Some newer standards are requiring a greater number of water closets for female students.

2.15 Internal water supply is adequate with sufficient pressure to meet health and safety needs. (10)

Water requirements for school buildings may be based on the following per person:

Without cafeteria, gymnasium or showers	15 gal/day (68.25 l)
With cafeteria, but without gymnasium or showers	20 gal/day (91.00 l)
With cafeteria gymnasium and showers	25 gal/day (113.75 l)

Where a public water supply is provided, city officials will be able to provide information on the quantity being furnished to the building. Water pressure may be informally checked by flushing several water closets and turning on drinking fountains and handwashing facilities. If pressure does not drop significantly, the system is considered satisfactory.

2.16 Drainage systems are properly maintained and meet requirements. (10)

The drainage system inside the building can be checked by forcing a maximum of water through the system. This can be accomplished at the same time as checking item 2.15. When forcing excess water through the system, note how adequately the water is drained.

Discuss the matter of adequate drainage with building personnel that may be expected to be knowledgeable about the matter.

There should be floor drains in each restroom and in other locations where hazard of broken pipes and stopped drains may otherwise create a flooding problem.

2.17 Fire alarms, smoke detectors, and sprinkler systems are properly maintained and meet requirements. (10)

The fire alarm system, regardless of the type of school, should be on a separate electrial circuit so that is is not inadvertently turned off. The alarm should have a distinct sound, different from the school bell system. It should be capable of activation from several points in the building in addition to the central office. The alarm should be of sufficient volume to be easily heard throughout the building. A battery powered alarm system should be provided as an alternative in case of a power failure.

Some local codes now require schools to have smoke detectors and/or sprinkler systems. School planners have mixed feelings about such requirements in schools that can be quickly evacuated. Nighttime and weekend emergencies would seem to justify detectors and/or sprinklers more than school day fires. Checks should be made to determine that all such equipment is in proper working condition. Specific local codes must be the final authority.

2.18 Intercommunication system consists of a central unit that allows dependable two-way communication between the office and instructional areas. (10)

Communications systems might be either a public address system or an internal telephone system. Phones cause less distraction to students but do not permit the "broadcast" of announcements, etc. Two factors should be considered essential: the equipment should be maintained in operable condition; the initial contact should be possible from the classroom as well as the office. In the event of an emergency, this feature is of a major significance.

2.19 Underground electrical service is provided. (5)

Most schools just as with most homes, will have the electrical service provided by overhead wires. Underground service has two major advantages. The unsightly aspect of the lead-in wires is eliminated. Service for electric power, telephone and sometimes cable television, can detract greatly from a fine structure. Of more significance though is the matter of safety. Over-head lines are subject to windstorm and lightning. A recent law suit in Texas was based on the claim that transmission lines constructed by a utility company, emitted electrical current that was alleged to be harmful to school children. Power lines crossing playgrounds, parking areas and athletic fields are potential hazards. Ideally all service lines will be placed underground thus improving looks and safety as well as providing decreased maintenance.

2.20 Exterior water supply is sufficient and available for normal usage. (5)

Normal usage of the water supply includes routine building maintenance, lawn and landscape care and minor emergencies, such as small fires, etc. For these purposes, at least one water outlet on each side of the building is essential. The adequate supply should also accommodate major fire control. Water supply by hydrant is essential for this purpose. Buildings located in areas without public utilities would benefit from water sources such as ponds or streams of water on the site. Sprinkler system for lawns and landscaping are highly desirable. Athletic fields usually have need for sufficient water supply to enable the turf to have reasonable growth thus decreasing the likelihood of injury.

2.21 Each learning/teaching area has four or more convenient wall outlets. (5)

With the increased use of media equipment and computers, classrooms must provide access to electric power. At least one outlet on each of the four walls is desired. These outlets should be in good condition with cover plates properly affixed. In classrooms for young children, plastic caps should be placed over the outlets so as to prevent the insertion of any metal object into the outlet. Appropriate permanent electrical service needs to be furnished in special areas, such as typing rooms, serving areas and computer laboratories.

3.0 Plant Maintainability

Local school officials have a responsibility to preserve and protect the physical properties of the district. Buildings should be maintained, as nearly as possible, in their original state. Time, the elements, and normal wear will cause deterioration which hopefully can be lessened by effective operational and maintenance procedures.

Maintainability refers to those aspects of a building which make possible the extended life of the building at reasonable cost. The characteristics of the building that relate to maintainability are design, construction materials, durability of fixed equipment, floor coverings, interior wall and ceiling materials, hardware and fixtures. The emphasis here is on the general quality of the building per se rather than the routine care and maintenance.

Maintainability is built into the facility and therefore results from decisions about "building quality" when the school is originally planned, remodeled or modernized. The true total cost of a building is the original capital investment plus interest costs plus maintenance for the life of the building.

3.1 Windows, doors and walls are of material and finish requiring minimum maintenance. (10)

In all type of school buildings the choice of materials for windows, doors and walls is or major importance. Sturdy construction will add greatly to the longevity of these building features. The type of finish will determine the ease of routine cleaning.

Windows may be fixed or operable. If operable, weights and locks are significant factors. Maintenance varies considerably depending on whether frames are wood, steel or aluminum. Glass thickness affects the amount of breakage.

If one checks the door schedule for a new school, it is surprising to become aware of the number, size, type and finish of the doors throughout the building. Because most doors receive so much use, finish materials that are somewhat permanent, e.g. formica, can make a major difference. Hinges and locks and door closers are always of importance. Panic bars on exit doors can be a problem due to poor quality.

Ceramic tiled walls are more easily maintained than other finishes. Another alternative is the use of epoxy paint which is very difficult to scratch or mar and is also easily wiped clean. The least durable is flat paint, especially when it is used on cement or cinder block walls.

PLANT MAINTAINABILITY

3.2 Outdoor light fixtures, electric outlets, equipment and other fixtures are accessible for repair and replacement. (10)

The key word here is accessibility. Quality fixtures and equipment will need less repair and less frequent replacement, but too often maintenance is not provided because of the inconvenience of getting to the faulty item. Outdoor lighting is often not kept operative because of the difficulty in reaching the high-up fixture. But it is not unusual to see poor maintenance of outdoor fixtures even at lower levels. Plans for maintenance should be made at the same time that installation occurs. Lighting fixtures in auditoriums and gymnasiums can also be difficult to maintain.

Fixtures and equipment should be considered carefully at the time of acquisition or specification development to determine that all aspects of maintenance can be performed easily and conveniently.

3.3 Floor coverings throughout the building require minimum care. (10)

The information provided here is applicable to schools at all grade levels. The views expressed about floor coverings related also to many special areas in buildings. Because of the critical nature of the classroom, that portion of the school is emphasized here.

Floor materials usually consist of wood, vinyl tile, ceramic tile, terrazzo or carpet. Of these, wood and tile were the most common for many years and are still found in most older buildings. Carpet is now widely accepted as the most easily maintained. Terrazzo has the longest life expectancy and requires relatively little care and maintenance, but since it is more expensive it is used more typically in selected areas, such as corridors and restrooms.

3.4 Ceilings and walls throughout the building, including service areas, are easily cleaned and resistant to stain. (10)

Plastered ceilings and walls are the most durable and are easily maintained if protected by a good quality paint. Buildings that have minimal or improperly designed foundations tend to suffer from cracks as the building undergoes shifts. Sound transmission between rooms is usually less with plastered walls.

During the past 30 years ceilings have typically been constructed as a suspended ceiling with acoustical panels. Often such a ceiling will last for many years without any problem. However, roof leaks frequently require replacement of panels; unfortunately, despite ease of replacement, variations in coloration cause a less-than-new appearance. Another fault of the panels is sagging and warping which cause the ceiling to have a poor appearance.

The service areas such as kitchens present special problems because of heat, grease, and smoke. Ceramic tile is often used because of the ease of cleaning. Painted surfaces, if used, should have an epoxy paint. Acoustical ceiling tile for such areas can be provided with a special surface that is more easily wiped clean.

3.5 Built-in equipment is designed and constructed for ease of maintenance. (10)

Built-in equipment in any school building will typically include counters, cabinets, shelving and chalkboards in classrooms. Kitchens and cafeterias usually have built-in space for preparation, food service, and dish washing. Bulletin boards and metal lockers are often provided in corridor areas. Built-in equipment is often found in shops and laboratories.

All such equipment should be designed for educational use. Equipment typically found in residences will not meet the heavy usage occurring in a school setting. Hinges and locking devices are of importance to maintenance reduction. Kitchen and cafeteria equipment usually is made of stainless steel for long service and ease of cleaning. Laboratory counter tops are usually molded from a chemical-resistant modified epoxy resin.

Chalkboards may be made from porcelain enamel, glass or slate. Extruded aluminum frames and chalk troughs are desirable. Tackboards are more durable when made from cork or vinyl material. Equipment and furnishings, if well made, will not have sharp or rough edges.

3.6 Floors in restrooms, kitchens, cafeterias and corridors require a minimum of maintenance. (10)

See information provided for item 3.3. The areas referenced here are heavy traffic locations and present special daily cleaning and routine maintenance.

A special need in each of these areas is reduction of slippery conditions. Terrazzo or ceramic tile are recommended for these locations. Use of floor wax can add to slippery conditions. Floor treatment should minimize this problem.

3.7 Hardware and finishes are of durable quality. (10)

The difference in cost between an inexpensive (low cost) building and one of reasonable quality is determined to a great extent by the quality of hardware and other finish items. If quality is sacrificed for economic reasons, building maintainability expenditure will be costly over the life of the building.

3.8 Restroom fixtures are wall mounted and of quality finish. (10)

Daily cleaning of restrooms in a public facility is always a significant operational task. Restroom fixtures contribute greatly to the ease or difficulty of the care of the restrooms. Whenever the fixtures are floor mounted, floor cleaning is more difficult and less efficient. Daily cleaning of the fixture is more difficult. Wall mounted fixtures greatly aid the daily cleaning and make repairs less difficult.

Wash sinks are typically wall hung and do not create the problem discussed above. Faucets on sinks are source of difficulty if they are not self-closing.

Stall partitions can also create maintenance problems. In fact, the lack of well anchored partitions leads some school systems to remove partitions from boys' restrooms - a less than appropriate arrangement. Rigid ceiling hung partitions are best if properly installed.

3.9 Adequate custodial storage space with water and drain is accessible throughout the building. (10)

In years past, little consideration was given to the convenient location of custodial closets. More typically in newer schools, this need is recognized. Ideally, a custodial closet will be located near a cluster of classrooms. In buildings with long corridors, custodial closets should be located near the middle of the building wing or section.

Accessibility of water and cleaning materials is important for meeting emergencies and represents a significant time saver for the custodian.

Custodial closets require a minimum of 36 square feet (3.35 m^2), shelving for cleaning materials and space for hanging brooms and mops. A mop sink recessed in the floor is needed. Closet doors should be lockable for security purposes.

It is especially important to have custodial closet space on each floor of a multi-story building.

3.10 Adequate electric outlets and power are available in every area to permit routine cleaning. (10)

The care of school buildings necessitates the availability of electric service. Floor scrubbers and vacuums require electric power. Although electric cords can be used to obtain access to power, reasonable limitations exist. Classrooms typically will not present a problem. Corridors, gymnasiums, cafeterias and auditoriums, however, may be less conveniently cared for when electric outlets are not provided.

4.0 Building Safety and Security

School officials have no greater responsibility than to provide and maintain school facilities in the safest possible condition. Students, employees, and patrons can reasonable expect that their well-being is protected whenever they enter or use the school facilities. Complete safety cannot always be assured, but every effort must be made to achieve and maintain the highest level of safety that is possible. Safety hazards in schools may relate to site location, building design, selection of material or poor operational practice. Security as a protection of the building itself is essential to assure uninterrupted operation of the school program.

This section of the guide considers site, building and emergency safety.

4.1 Student loading areas are segregated from other vehicular traffic and pedestrian walkways. (15)

Bus loading areas should be separated from other vehicular traffic to assure the maximum of safety for students while loading and unloading buses. A mixture of types of traffic can create confusion which leads to accidents. Walkways to accommodate non-bus pedestrians should be made as separate as possible. Especially important is the avoidance of students crossing bus loading areas and bus driveways to reach playgrounds and athletic fields. Ideal is the arrangement found in some large high schools where two bus lanes pass through an enclosed structure similar to a commercial bus terminal. Such a design with as many as eight or ten buses available to students at one time maximizes the safety of students and protection from the elements.

4.2 Access streets have sufficient signals & signs permitting safe entrance/exit from school area. (5)

The focus here is on student access to the school site. Although the need for safety protection may vary some with the age of the school group to be served, basic safety conditions are the same for all school buildings. Approaches to the school should be marked with signs designating a school zone. Street crossing areas should be marked with appropriate safety zones on the pavement. Stop signs may be necessary depending upon the number of pedestrians and the volume of vehicular traffic. Where both are heavy number-wise, a lighted stop signal may be needed.

Special problems are sometimes created when school sites and playgrounds are on opposite sides of the street. When possible, consideration should be given to closing of a street during the school day.

4.3 Off-site sidewalks are available for safety of pedestrians. (5)

Despite large numbers of students being transported by school buses and many olders students driving their own cars, there is a need for sidewalks in school areas. Some students do walk to school, some parents visit school on foot and pedestrian traffic occurs with school activities. Sidewalks are not a luxury but a safe means of traversing streets and roads.

School officials typically have no authority for off-site sidewalk maintenance or construction. It is the school's responsibility, however, to exercise leadership in stressing to community governing bodies that safety in school areas requires sidewalks.

4.4 On-site sidewalks and steps are designed and maintained for safety. (5)

The school system is responsible for on-site sidewalks. These may lie along the perimeters of the site next to streets or around and between buildings on the campus. Sidewalks need to be of sufficient width, 4 - 6 feet (1.22m - 1.83m), depending upon the amount of pedestrian traffic. Sections of the walk should lie evenly and be free from holes and cracked corners. On-site sidewalk steps must follow barrier-free requirements.

An important safety factor related to on-site sidewalks is that street crossing signs, school zone signs, flashing lights or stop lights are provided. Assurance of student safety is a major responsibility of school officials.

4.5 Vehicular entrances and exits permit safe traffic flow. (5)

Schools by their very nature comprise two elements, students and vehicles. A small school campus may have only a single driveway and parking area; larger schools will have diverse access to specific areas of the campus. Safety hazards increase somewhat as the number of vehicular entrances and exits increase. Of great significance is the design of safe vehicular drives. Provision for one-way traffic is highly essential for most school settings. A separation in driveways and parking areas is desirable for three different groups: (1) students, (2) parents and visitors, and (3) employees. Such an arrangement tends to lessen congestion and improve safety conditions around the school.

4.6 Locations and types of playground equipment are free from hazard. (Elementary & Middle) (5)
4.6 Athletic field equipment is properly located and free from hazard. (High School) (5)

Note the references here are to playground equipment at the elementary and middle school levels whereas the focus is on athletic equipment at the high school. Playground equipment has prevailed in its conventional design for many years. Swings, slides, ladders, May poles, and similar pieces have been in use for years and always presented less than truly safe conditions. These factors should be considered: (1) design, (2) material, (3) placement, and (4) surrounding surface. Equipment should be designed as injury free as possible. The construction should be free of sharp edges and be of material in sizes easily grasped by the age student using the equipment. Crowded placement of equipment may lead to increased accidents. Surface materials, such as sand, pea gravel and wood chips, will lessen the impact from falls. More appropriate contemporary equipment, such as modular wooden units, rubber tires, and preformed concrete crawl units, are consistent with the psychology of play for children. Early childhood (Pre K. and K.) play areas should be fenced and separated from areas used by older children.

High school athletic equipment considered here might include baseball backstops, goal posts, bleachers and running tracks. For outdoor activities at this age level the equipment is viewed primarily in terms of sturdy construction and durability. Bleachers are the single most hazardous item for high schools and should be carefully inspected at least annually. At the high school, condition of playing fields may be of as much importance as the fixed equipment. Avoidance of holes, furrows and sunbaked soil can decrease injury.

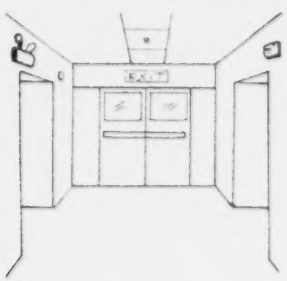
4.7 The heating unit(s) is located away from student occupied areas. (20)

In older conventional schools it was customary to locate the heating unit (usually a boiler) in a basement area. Often classrooms were built over the furnace room. Such an arrangement is very hazardous in the event of fire or an explosion. Newer buildings usually provide the heating unit in a part of the building at ground level or only partially submerged. In such cases, the area is often separated from classrooms. Standards used in some localities necessitate the location of the heating unit in a structure separate from the main structure. This is the best and safest arrangement. Vocational facilities and classrooms in warmer section of the country often use open flame gas fired units in instructional areas. Despite safety mechanisms that may be provided on the unit, the wisest policy is to never place an open flame unit within an instructional area. Leaking gas fumes, noxious exhausts and explosion are all increased hazards where this type of unit is used.

4.8 Multi-story buildings have at least two stairways. (15)

In case a blockage of fire occurs in the proximity of one set of stairs there must be an alternate route to the ground level. In older buildings, this requirement is often met through the provision of a fire escape. The condition of stairs and fire escapes is very important. Concrete steps or metal are best for fire safety. If the stairs are of wood construction, storage areas should not be used under the stairs. Narrow stairways, excess turns or partial blockages could all increase hazard. Stairways in schools should lead directly to major exits on the ground level. The width of stairways is also very important. Even in smaller buildings a minimum of 6' is desirable.

4.9 Exterior doors open outward and are equipped with panic hardware. (10)



Safety conditions in schools are made more acute by the inability over the years for hardware suppliers to design panic hardware that really meets the need. Doors with panic hardware sometimes stick or fail to function properly so that doors do not open easily. In addition these same doors may fail to provide adequate security when the building is closed. Poorly designed and poorly maintained panic hardware has led to use of padlocks and chains on school exterior doors. Such devices cause a potential hazard in case of emergency evacuation of the building. Chains, turn-bolt locks, and dead-bolts requiring keys to open from the inside are all unacceptable in schools if the doors are needed for routine or emergency egress.

4.10 Emergency lighting is provided throughout the building with exit signs on separate electrical circuits. (10)

Classrooms (and any occupied area of the school) need to be protected from complete loss of illumination. Again this possibility exists for windowless buildings and all schools involved in night use. Instructional areas should be provided with sufficient lighting capability to prevent panic. Large auditoriums are especially critical in this respect. Battery powered lighting units are now commonly provided in corridors and large group areas.

All public buildings, including schools, should have lighted exit markers for exterior doors. These signs should be wired for electrical service not linked with other power in the building. In case of temporary power failure, such as overloads, the exit signs should be on a separate circuit. An emergency power source is needed for this equipment.

4.11 Classroom doors are recessed and open outward. (10)

Schools are unusual in the number of doors to be found throughout the building. Special attention should be given to classroom doors since these doors typically have heavy usage. Recessed doors are a safety factors which tend to reduce corridor obstruction. The combination of narrow corridors and non-recessed doors create, when the doors are open, more an obstacle course than a hallway. Schools, like the most public buildings, have a need for doors to open outward so as to lessen the risk of student injury if an emergency occurs requiring quick evacuation of the building.

4.12 Building security systems are provided to assure uninterrupted operation of the educational program. (10)

Security systems are now typically provided in most school buildings. Such systems as laser beam vandal detectors, entrance alerts, and appropriate night lighting can protect the school district property. Protection of this sort can help to avoid vandalism which could necessitate temporary closing of schools and interruption to student instruction.

4.13 Flooring (including ramps) is maintained in a nonslip condition. (5)

Wet terrazzo floors may be the most hazardous type of floor. Such conditions may be found near entrances, in restrooms, and in dressing/shower rooms. Custodial care with a mop may correct this problem. Occasionally someone uses wax on terrazzo thus creating a serious slippery condition. Vinyl tile floors which require frequent scrubbing and waxing often become very slippery, particularly when slightly wet. Obviously schools with carpeted interiors can also present safety problems resulting from worn or loosely attached carpet. Ramps and stairs should be protected with the nonslip strips that are glued or cemented to the critical locations.

4.14 Stair risers (interior and exterior) do not exceed 6-1/2 inches and range in number from 3-16. (5)

Inconsistency in the height of stair risers can cause falls and possible injury. The 6-1/2 inch standard may vary somewhat in different localities, but only slight differences should prevail. Note the requirement that no less than three risers should be used. If only one or two risers are provided, there is a tendency to not be aware of the limited difference in levels. The limit of 16 risers assumes a resting point in between flights of stairs where a full story is involved. Thus a fall on the stairs will be limited to a shorter distance.

4.15 Glass is properly located and protected with wire or safety material to prevent accidental student injury. (5)

Glass was less of a problem in older, more traditional buildings. The use of glass increased as schools were made more visually open. Exterior glass doors become popular until it was discovered that too many people tried to walk through them. Glass around exterior doorways, as well as in library, office and other special areas can present safety problems. At any location where student traffic is heavy, safety glass is essential. Better yet, is an avoidance of the use of glass where breakage and student injury may occur.

4.16 Fixed projections in the traffic areas do not extend more than eight inches from corridor wall. (5)

Corridors are intended to facilitate the movement of people; in schools, most of these people are students. Fixed projections, such as display cases, drinking fountains, benches, and storage cabinets, are not a problem if the corridors are sufficiently wide. In an emergency, projections can lead to possible injury of students. In a practical sense, the flow of student traffic will be smoother if such obstructions are totally avoided.

4.17 Traffic areas terminate at an exit or a stairway leading to an egress. (5)

Corridors and stairways should be designed so as to facilitate easy access to the exterior of the building. The reason for this is to aid in efficient evacuation of the school. Dead-end corridors are a special hazard. Usually any corridor that services more than two classrooms is considered to be a dead-end if no exit is provided at the end of that corridor. For the reasons already mentioned, a stairway is also considered to be improperly designed if it does not lead directly to an exit. Every precaution should be taken to assure that building design does not cause entrapment of building occupants.

4.18 Adequate fire safety equipment is properly located. (15)

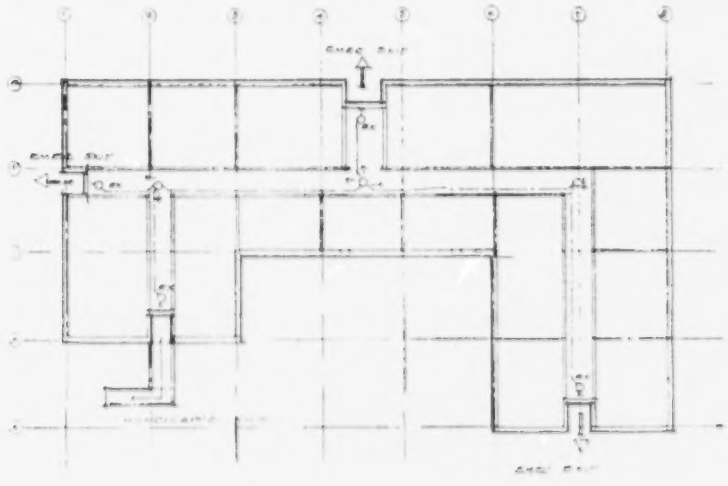
In schools, fire safety equipment usually consists of extinguishers (liquid and chemical) and fire hoses. Portable fire extinguishers control by either cooling the flame or by smothering the fire. These devices are appropriate for small fires. Especially important is the periodic inspection required to ascertain that an extinguisher will function adequately when needed. Inspection tags sometimes reveal a lack of service to fire equipment. When such is the case, a false sense of security exits.

Hoses are less common than in the past. Their effectiveness depends upon sufficient water pressure and inspection to assure that the hose itself has not deteriorated. Hoses and portable extinguishers need to be located not more than seconds away from areas of potential fire.

More recently, schools are being equipped with heat and smoke detection devices. Ceiling sprinklers are being used to some extent. Their value may be largely for times when the building is vacant rather than in use, since most modern schools can be very quickly vacated.

4.19 There are at least two independent exits from any point in the building. (10)

Fire, explosions, and windstorms can cause an exit to be blocked. For this reason all school buildings should have two or more exits to assure that no one will be trapped. Ground level classrooms with direct access to the outdoors represent a safer arrangement than otherwise. Except in windowless buildings (where it is impossible) at least one window should be designed of sufficient size to permit egress. In terms of safety, a good case could be made for at least one window in each room to assure maximum safety. Reference to 4.8 and 4.17 may be helpful.



4.20 Stairways and exits are of noncombustible material. (10)

In older buildings stairways and exits are frequently constructed of wood. Obviously, these areas are critical to the safety of occupants of the building who may find their attempts to get out of the building seriously impeded. Concrete and steel are considerably safer materials for these locations since both are noncombustible materials.

4.21 Fire-resistant materials are used throughout the structure. (10)

Although somewhat less significant than the stairways and exits, every school should be made as fire safe as possible. This means a minimum use of wood. Special hazards exist in schools with wooden floors and wainscots in corridors. Less often but sometimes a wooden wainscot is still found in classrooms. In some regions of the nation considerable wood is used for schools with very pleasant appearance but extra fire safety procautions are necessary. Stage curtains should be checked to determine if they are made of fire resistant material. Sprinkler systems can increase safety to human life and help protect the building during non-school hours.

4.22 Automatic and manual emergency alarm system with a distinctive sound and a flashing light is provided. (10)

Fire alarm systems are a "must" in every school building. Some schools still operate with a manual bell system used regularly for change of classes. Such an arrangement is not satisfactory. A distinctive sound is essential for an emergency alarm. The automatic system should be wired on a separate electrical circuit and have sufficient volume that can be heard throughout the facility. A manual alarm is needed in the event that all power to the building has been terminated. Current standards require a flashing light that will alert deaf individuals.

4.23 Ample space is provided in corridors or protected areas for student safety in case of natural disasters. (5)

Schools often are a safer place for students than their homes. When tornados, hurricanes, or other severe storms occur, the school should have an area designated as a safe place. The underground school provides the safest conditions at such times. Schools with a basement area may also provide reasonable safety. Buildings totally above ground will hopefully have wide corridors or an equivalent place for students to gather during an emergency.

5.0 Educational Adequacy

The educational adequacy of school buildings, in a sense, represents the purpose of the entire appraisal process. This is true because schools exist primarily to serve the educational needs of a community and school district. The determination of how adequate the facility is, in the final analysis, must be derived from the relationships between educational program and physical structure Individual behavior results in part from the environment. The environment provided by the school building will deter or enhance the instructional program.

The criteria found in this section are categorized according to academic learning, specialized learning and support space. The quality as well as the quantity of the space in the school is a major focus in the analysis of facility adequacy.

5.1 Size of academic learning areas meets desirable standards. [Elementary School (25)], [Middle School (15)],[High School (10)]

Academic classrooms are those used for basic subject fields, such as social studies, mathematics and English. Usually such classrooms are designed for 20-30 students. Somewhat surprising in school design is the practice of reducing the size of the room as the student becomes more mature. Young children have need for more movement within classrooms, especially since they tend to spend more of their instructional time in one room. Secondary schools are allocated fewer academic space points and more special learning points than elementary school.

Standards for the size of academic learning areas vary from state to state. Some states mandate minimums, others provide recommendations. There are no national standards. The allocation of space for academic areas seems to have evolved from practice rather than from sound educational research.

In an academic classroom, regardless of the age of the student, the per student square footage allowance is usually 25-30 (2.33-2.79 square meters). When the state or the school district determines the numbers of students per class or section, the calculation of room size therefore is determined. The following represent generally accepted room sizes:

Suggested Academic Classroom Size

	Minimal	Acceptable	Ideal
Kindergarten (and PreK.)	900 (83.70*)	1050 (97.65)	1200 (111.60)
Elementary School	700 (65.10)	800 (74.40)	900 (83.70)
Middle School	650 (60.45)	750 (69.75)	850 (79.05)
High School	600 (55.80)	700 (65.10)	800 (74.40)

*Values in parenthesis represent metric equivalents.

Schools designed with the "open space" concept as an educational philosophy tend to provide instructional spaces that do not coincide with the above standards. For those schools the square footage standard for a per student calculation is applicable.

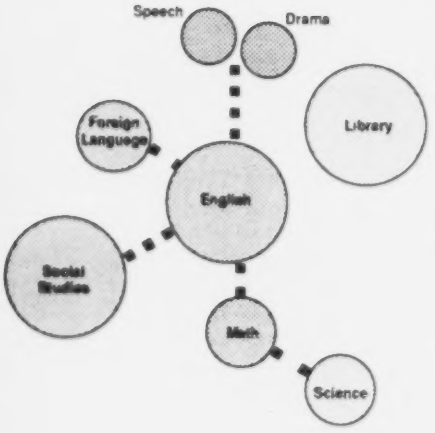
5.2 Classroom space permits arrangements for small group activity. [Elementary School (15)], [Middle School (10)], [High School (5)]

At all instructional levels, the new emphasis on cooperative learning (group work) necessitates space for this type of instruction to occur in all content areas, including the academic portion of the curriculum. Every class should have an alcove or corner where 3-5 students can assemble for group work. At the elementary level, reading areas may be used for this purpose. High schools may have a variety of spaces in the building for group activity. However, some space is, nevertheless, essential in academic classrooms.

5.3 Location of academic learning areas is near related educational activities and away from disruptive noise. (10)

This criterion considers the practical convenience of a building design that brings related instructional areas into nearby space. Aiding students and teachers in keeping appropriate space in close proximity is especially important in making the facility efficient. The noise factor is considered in the columns dealing with isolation.

Educational Learning Space Relationships



Learning Space	Near To	Isolated From
1. *Administration*	Main Entrance Health Suite	Teacher's Workroom Music Shops Gymnasium Athletics
2. *Art*	Industrial Arts Photography	
3. *Athletic Field*	Gymnasium Parking Lots Street Access	Academic Classrooms
4. *Auditorium*	Street Access Parking Lot 2nd Major Entrance Music	Gymnasium
5. *Book Storage*	Administration Academic Classrooms	General Storage Custodial Storage
6. *Cafeteria*	Major Entrance Academic Classrooms Storage and Receiving	
7. *Classrooms*	Central Area Library	Music Shops

Learning Space	Near To	Isolated From
8. *Commercial Program*	Administration	Academic Classrooms
9. *Commons* (student)	Main Entrance Administration Library Academic Classrooms Rear and Side Entrances Cafeteria Auditorium	Shops
10. *Custodial Workroom*	Utilities Storage	Classrooms
11. *Custodian Storage* (decentralized)	Storage & Receiving	Food Service Main Entrance
12. *Conference Rooms*	Administration Guidance Teacher's Lounge Academic Clusters	Laboratories Shops Music Cafeteria
13. *Driveways*	Administration Main Entrance Storage & Receiving Music Auditorium Cafeteria Athletic Fields	Play Areas
14. *Guidance*	Administration Main Entrance	Direct Access to Administration
15. *Health Services*	Administration Main Entrance	Guidance
16. *Homemaking*	Art Student Commons	Food Service Gymnasium
17. *Industrial Arts*	Art	Vocational Shops Auditorium Music Administration
18. *Kindergarten*	Separate Play Area Driveway Restrooms Storage Cafeteria	Other Classrooms
19. *Kitchen* (Cafeteria)	Storage	Auditorium

Learning Space	Near To	Isolated From
20. *Library*	Academic Classrooms Exterior Entrance	Shops Music Auditorium Gymnasium
21. *Music*	Auditorium Art Homemaking	Academic Classrooms Administration
22. *Main Entrance*	Access Streets Parking Administration	Storage & Receiving Shops
23. *Parking*	Maintenance Auditorium Gymnasium Athletic Fields	Playgrounds
24. *Restrooms*	Classrooms Playgrounds Public Areas	
25. *Science*	Labs Growing Areas Nature Walks	Food Service Commons Library Auditorium
26. *Service*(utilities)	Access Drives Storage & Receiving	All Instructional Areas Playgrounds
27. *Shops* (vocational)	Athletic Areas Agricultural Land Storage & Receiving	Academic Areas Other Buildings
28. *Storage*	All Instructional Non-Instructional Service	Main Entrance
29. *Teachers' Lounge*	Related Instruction Work Area	Administration Guidance

5.4 Personal space in the classroom away from group instruction allows privacy time for individual students. [Elementary School (10)], [Middle School and High Schoo! (5)]

Research emphasizes a need for all persons to have "time out" from the instruction and activities of the total class. Reduction of stress is an important aspect of learning. In elementary school, lofts help to serve this purpose. Personal learning space in the middle school is sometimes found in reading alcoves in a library. Older students in a high school can benefit from individual student study carrels.

5.5 Storage for student materials is adequate . [Elementary School (10)], [Middle School and High School (5)]

Students have at least two different needs for storage. Depending upon the climate and the season, wearing apparel must be accommodated. For all except the young student, metal lockers located in the corridors will adequately serve this need. Lockers may be wall recessed or located in locker pools (clusters). Regardless of the type of installation, the sufficiency of size and number is an important factor. Convenience of location is also a consideration. For most students (those in a departmentalized instructional program) lockers will also accommodate books and materials. In self-contained rooms, student desks will serve for most individual belongings. Cupboards, cabinets and drawers are often needed in classrooms to store project materials which cannot easily be taken from the room.

5.6 Storage for teacher materials is adequate. [Elementary School (10)], [Middle School and High School (5)]

The storage of personal belongings of the teacher necessitates a wardrobe or cabinet of sufficient height to accommodate a full-length coat. Shelves are also very essential. This storage area should have a lock to assure protection for items kept there. In some larger secondary schools, department office storage provides desirable space to take care of teacher needs.

In addition, each classroom should have book and paper supply storage sufficient to keep the materials for the specific teaching station. Seldom does a classroom truly have enough storage space. Teachers generally express a need for more such space.

5.7 Size of special learning area(s) meets standards. (15)

In special learning areas, it is essential to determine the typical class size for the specific program. The instructional areas to be considered here include but are not limited to: remedial classes, speech and journalism, special education, computer laboratories, in-school suspension, etc.

The general guideline for the allocation of space regardless of grade level is approximately 25-30 square feet (2.3-2.8 square meters) per student. For the specialized subject areas (mostly at the secondary level) the following are typical allocations of space on a per student basis:

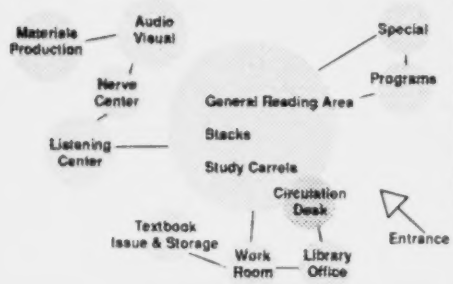
Suggested Space for Special Learning Areas

Area	Square Footage	Square Meters
Art	45-50	4.19-4.65
Commercial		
Bookkeeping	25-35	2.33-3.26
Business Law	25-30	2.33-2.79
Related Business Education	25-30	2.33-2.79
Typing	35-40	3.25-3.72
Crafts	45-50	4.19-4.65
Industrial Arts		
Shop (min. 1800 sq. ft., 167.4 sqm.)	100-110	9.30-10.23
Mechanical Drawings	35-40	3.26-3.72
Language Laboratory	45-50	4.19-4.65
Library	30 per seated student for a minimum of 15% of student body	
Music		
Band (min. 2000 sq. ft., 186 sqm.)	40-50	3.72-4.65
Choir	30-35	2.79-3.26
Physical Education		
Dressing Rooms	50-60	4.19-5.58
Health Classrooms	25-30	2.33-2.79
Science Laboratory	45-50	4.19-4.65
Special Education	35-45	3.26-4.19
Auditorium		
Audience Space	10-12/seated capacity	0.93-1.12
Stage & Total Auxiliary Space	3750-4800	348.75-446.40

5.8 Design of special learning areas is compatible with instructional need. (10)

Schools designed specifically for the program offered usually provide space that at least serves reasonably well. Occasionally rooms may be odd-shaped, long and narrow, or with alcoves which may be unsuited for regular instructional needs. The problem referenced here more often occurs in old obsolete buildings or in buildings used originally at an instructional level and then transformed, with a minimum of modification, for use at a different level. High schools, after many years of use, sometimes are converted to elementary of junior high schools, so as to permit the construction of a new high school. Such a conversion often results in a building with space inappropriate for the current program. For each special learning area the design of the space should have evolved from the specific instruction to be provided.

5.9 Library/Resource/Media Center provides appropriate and attractive space. [Elementary School (10)]; [Middle School and High School (15)]



This space may be given a variety of names. Some schools accommodate media in the same area with library materials, thus creating an instructional materials center. Whether these needs are combined or met separately, adequacy is a significant factor. Accreditation standards usually refer very specifically to this portion of the school with an emphasis on available seating and work space for 10-15% of the student body. Design and decor are a major factor in this area. Even in schools with all hard surfaced floors the library is often carpeted. Storage and workspace for repair and cataloging is essential for an adequate center. See space standards under 5.7.

5.10 Gymnasium (or covered P.E. are) adequately serves physical education instruction [Elementary] (5)

5.10 Gymnasium and outdoor facilities adequately serve physical education instruction. [Middle School (10)]; [High School (15)]

Physical education should be provided at the elementary level although it is not always mandated. It is assumed the program provides more than supervised play. If appropriate enclosed (interior) space is not available, then an outdoor covered area is acceptable. Sometimes lunchrooms are used as multi-purpose areas including physical education. Such an arrangement is appropriate if sufficient time is provided for class schedules. The tasks of rearrangement of furniture creates an extra workload, however.

Middle school facilities require a gymnasium available for a well-rounded program. Bleachers are not a necessity although if they are available the gym may substitute for an auditorium. Typically, such an arrangement is less than ideal.

At the high school level provision is usually made for physical education and athletics. For these upper grades, the total plant must include shower and dressings rooms, equipment storage space, adequate ventilation, spectator accommodations. Title IX requirements now stress the adequacy of girls' facilities comparable in size and convenience to that provided for boys. See space standards provided under 5.7.

5.11 Pre-kindergarten and kindergarten space is appropriate for the age of students and nature of instruction. [Elementary] (10)

Too often as kindergarten programs and those for four-year-olds are initiated, a regular elementary classroom is provided. This amount of space is insufficient usually for the amount of activity necessary for children of this age. Some open space, informal alcoves, and arrangements for quiet time are needed. Large play apparatus takes space and extra materials storage is essential. Direct access to a fenced play area is important. Usually restroom space separate from that used by the older students is provided. Carpeted floors help to create a pleasant environment and aids in effective use of the floor space.

5.11 Science program is provided sufficient space and equipment. [Middle School & High School] (10)

At both middle school and high school levels science is a very important instructional area. Classroom space and laboratory space should be provided. Lab stations are needed for small groups of students (3-4) and in sufficient numbers to accommodate classes of 20-25 students. Teacher preparation space is essential. Often such space is located between two instructional areas so as to serve more than one teacher. Note carefully the provision for the several science areas since their needs are quite different.

5.12 The music program is provided adequate sound treated space. [Elementary School (5)], [Middle School (10)], [High School] (10)

Music programs are now universally accepted at all grade levels. Although in some elementary schools, the music teacher brings the program to the homeroom, separate space is highly desirable. Storage is an important factor for vocal music but becomes an increasing demand in the middle and high school instrumental programs. Partial acoustical treatment of walls and ceilings is necessary for quality instruction and also to avoid transmission of sound to other areas of the building. Tiered construction of space eliminates the need for portable risers. Separate rooms for vocal and instrumental programs are usually necessary except in schools with small enrollments. See space standards under 5.7.

5.13 Space for art is appropriate for special instruction, supplies, and equipment. [Elementary School (5)], [Middle School (10)], [High School (10)]

The space for the art program should accommodate either individual or small group table space. Lighting should provide greater illumination than in most other instructional space, and provision for natural light with a northern exposure is highly desirable. Direct access to out-of-doors is especially desirable. Access to water and sinks is necessary. Storage for supplies and ongoing projects is critical in art rooms. Square footage per student is in the 45-50 range (4.18-4.65 square meters).

5.14 Space for technology education, including computer labs, permits use of state-of-the-art equipment. [Elementary School (5)], [Middle School and High School (10)]

Technology education now encompasses much of what in the past was provided under vocational/technical programs. Computer labs are provided at all levels of instruction, elementary and secondary. The table that follows includes space generally considered to be vocational in nature.

Suggested Space for Vocational Program Areas

Area	Square Footage	Square Meters
Vocational		
Agriculture		
Shop (min. 1800 sq. ft., 167.4 sqm.)	100-110	9.30-10.23
Classroom	25-30	2.33-2.79
Auto mechanics		
Shop (min. 2500 sq. ft., 232.5 sqm.)	150	13.95
Cosmetology Laboratory	90	8.37
Distributive Education	30-40	2.79-3.72
Homemaking		
Clothing	40-50	3.72-4.65
Foods	40-50	3.72-4.65
Industrial Cooperative		
Training	25-30	2.32-2.79

5.15 Space adjacent to regular classrooms is provided for small groups and remedial instruction. (5)

There is a tendency for elementary schools to allocate all or most of its instructional space to typical classrooms. As instruction has become more oriented to small groups and individuals, a greater variety of space sizes have become necessary. Therefore, one should expect to find appropriate space for such educational activities as remedial reading, speech correction, federal title programs, etc. Such instructional activities should not be regulated to corridors, libraries, stages and boiler rooms. At the secondary level a variety of space is needed to serve this instructional need.

5.16 Storage space for student and teacher material is adequate. (5)

In special learning areas, storage for student and teacher materials can be critical because the amount of materials tends to be more extensive than in the regular academic subjects. The adequacy of storage assumes that in most of the special learning areas both open and closed shelving will be found and where necessary the appropriate security will be provided. See information provided in 5.5 and 5.6.

5.17 Teachers' lounge and work areas reflect teachers as professionals. (10)

Research on facilities and learning suggests an important linkage between student learning enhancement and the manner in which professional quality space is provided to teachers. The space dedicated to teachers is one indication of the important role of teachers. The amount of space, the furnishings, access to supplies, telephone and computers among other things provided to teachers contribute to the instructional process.

Sometimes the space for teachers' lounge and work is two separate areas but often is is a combined single space. In some traditional school systems, the name lounge is avoided since there is a belief that teachers need a work room but not a lounge. This space should be well furnished with comfortable lounge furniture, preferably for coffee and snacks. Microwave equipment is no longer a luxury. In a separate room or a large combined area, table space and copy equipment are necessary.

In a large school, several smaller teacher areas may be more convenient. Restroom facilities for both men and women teachers should be available preferably with entrances separate from but adjacent to the lounge.

This total area requires about 500-1000 square feet (46.5-93.0 square meters) for each 25 teachers.

5.18 Cafeteria/cafetorium is attractive with sufficient space for delivery, storage & food preparation. (10)

At the elementary level the cafeteria may serve as a multi-purpose facility or cafetorium. In all schools effort is needed to create a non-institutional environment. Most areas will be more inviting if the walls, ceiling and floor provide a well decorated effect. Color and arrangement of tables in the dining area make a great difference in the creation of a desirable atmosphere. Where possible, some exterior dining space creates a pleasant setting during mild weather. A variation in size and shape of tables is beneficial.

Serving areas should be carefully designed for sufficient space and to preclude crossing or overlapping of student lines. Food preparation space should be large enough to accommodate the type of meals and the number of kitchen personnel. Convenience is a major factor. It is not unusual to find food preparation areas designed with too much space. Restroom facilities with arrangements for handwashing accommodations are a general requirements for all kitchen help. The design of arrangements for return trays is an important consideration.

These standards are suggested:

Area	Square Footage	Square Meters
Kitchen	2 sq. ft. per meal served	0.19
Serving	0.5-0.8 sq. ft. per capacity of dining area	0.05-0.07
Dining	10-14 per seated student	0.93-1.30

5.19 Administrative offices provide an appearance consistent with the maturity of students served [Elementary School (5)], [Middle School and High School 10)]

The administrative suite for an elementary school is often a secondary principal's office with less space. For elementary age students the image of the office should be that of a place to seek help. Less space is needed but furniture, counters, etc., should be designed to fit the age of the students. At the secondary level this area of the school will be much larger, will have signs to identify such functions as student attendance, admissions, registration, administrative staff, etc. In this manner, the administrative office sets a tone for an appropriate operation of the building

5.20 Counselor's office insures privacy and sufficient storage. [Elementary School and Middle School (5)], [High School (10)]

This item refers in fact to the school's guidance function. At the elementary level these services may be on a part-time basis but space in the building for student consultation on both individual and small group basis is necessary. For the middle and high schools such space is needed for full-time personnel. A modest reception area and one or more counselor's offices will be essential. A conference room and storage for materials and supplies complete the requirements. Suggested space needed is:

Area	Square Footage	Square Meters
Reception	100-200	9.3-18.6
Counselor's Office		
-one or more	120-150	11.16-13.95
Conference Room	125-150	11.63-13.95
Individual Testing Room	40-50	3.72-4.65
Storage	30-40	1.79-3.72

5.21 Clinic area is near administrative offices and is equipped to meet requirements. (5)

The clinic (health suite) regardless of institutional level is typically located near the principal's (or other administrative) office. This is especially appropriate in a school with a modest enrollment where diversified personnel are usually not available. Restrooms, water and privacy are all essential. The following suggestions refer to space allocations:

Area	Square Footage	Square Meters
Total Suite - Elementary		
and Middle School	500-550	46.50-51.15
High School		
Office (nurse)	150-175	13.95-16.28
Exam room	275-300	25.58-27.90
Waiting Room	100-150	9.30-13.95
Rest Area (separate by sex)	100-150	9.30-13.05
Restrooms	30-40	1.79-3.72

5.22 Suitable reception area is available for students, teachers and visitors. (5)

There is need for a lobby or foyer in the administrative area. This permits those entering or leaving the administrative area to avoid the heavy student traffic during the passing of classes. A minimum of 200 square feet (18.60 square meters) should be provided with increased amounts according to school enrollments.

5.23 Administrative personnel are provided with sufficient work space and privacy. (5)

These offices will usually comprise at least a principal's office and secretary's reception area. For larger schools, space for 1-3 assistant principals and clerical personnel should be provided. A conference area, supply storage, restroom(s) and records storage may require specific assigned space. The administrative suite should be attractive and well-lighted. The office area should assure that adequate privacy is provided for all personnel for student and parent consultation. Usually the administrative space is located near the main entrance to the building. In larger schools, a decentralized staffing arrangement may necessitate the space be assigned in several locations throughout the building.

These allocations of space may be helpful:

Area	Square Footage	Square Meters
Principal's Office	200-250	18.60-23.25
Asst. Principal's Office	150-200	13.95-18.60
Reception-Elementary/ Middle School	200-250	18.60-23.25
Reception-High School	300-350	27.90-32.55
Storage	75-100	6.98-9.30
Vault	50-75	4.65-6.98
Clerk	100-150	9.30-13.95
Conference Room	250-300	23.25-27.90

6.0 Environment for Education

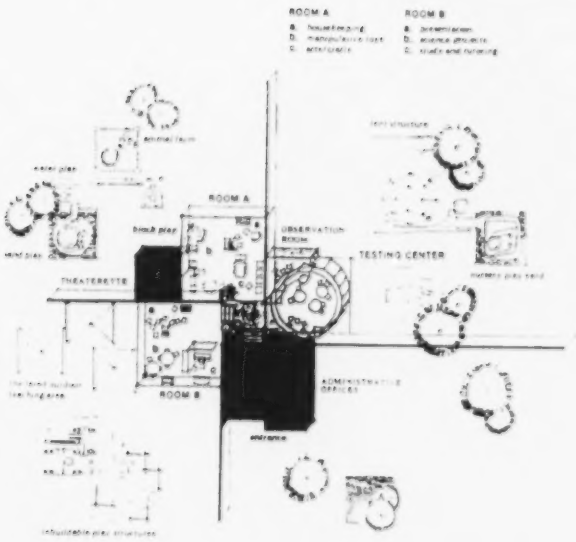
It is now generally accepted that a good physical environment aids learning. Building environment is the sum total of the factors which affect one's feelings about the facility. The first impression of the school as it is approached should be positive. The building should look inviting to children as well as adults. The general inside appearance should be conducive to learning. In most instances, one's reaction to an environment is derived from a pleasing combination of factors rather than from a variety of discrete items. Since the pleasant or unpleasant reaction to the environment is often psychological, it may require conscious effort to determine the basis for one's feelings. The physical environment of a school includes both exterior and interior conditions. Emphasis should be placed on physical comfort, ease of movement and aesthetic qualities.

Some factors considered as part of the educational environment were treated in the structural and mechanical section of this material. Here the relevance is in terms of the effect that the school building has on the educational learning process. In summary, the ultimate test of the quality of the school environment, is whether the users (students and teachers) will make use of the building at times when they are not required to be there.

6.1 Overall design is aesthetically pleasing to age of students. (15)

The design of a school tends to be most pleasing when it blends with the surrounding physical environment. For this reason architects try to "fit" the building to its surroundings.

Elementary schools should be inviting to the young child and therefore massive huge structures are best avoided for this age group. Some single story schools lose their desired image when they are designed with long sprawling wings. For this reason (as well as convenience) larger structures need to be designed with at least some multi-story space for classrooms.



Placement on the site (although perhaps technically part of design) is important to image. The orientation of the building will affect the first reaction particularly as the school is approached. Architects typically avoid placing a parking lot in the front of a school for obvious reasons. Even the elevation of the building is a factor in general appearance. Schools look better when placed at an elevation at least slightly higher than the street.

6.2 Site and building are well landscaped. (10)

Landscaping aids greatly in the appearance of a school. An inner city school may not have a campus or even space for shrubbery around the building and that is a detriment to its appearance.

There are at least three aspects to a school landscape plan. First are the foundation plantings which help to make the building look finished. Second are the trees and shrubs which should be planted in appropriated locations across the campus. Ideally, a parklike appearance provides the desired inviting image. The third factor is the lawn. A well seeded turf with its cool green effect adds greatly to the looks of a campus.
In addition to the effect on the users, a well kept school is a major public relations tool for the school system. Design and care of the exterior appearance pays dividends in many ways.

6.3 Exterior noise and poor environment do not disrupt learning. (10)

Careful selection of the school site is an important factor in creating a desirable learning environment. Avoidance of airports, expressways and heavy industry will be profitable over the years. When conditions necessitate such locations, special efforts should be made to reduce the exterior noise pollution inside the building. Exterior doors with closers that operate well can make some difference. The learning environment will exist at a greater quality level if exterior noise, and other distractions, can be avoided.

6.4 Entrances and walkways are sheltered from sun and inclement weather. (10)

Protection from the elements is essential for public buildings and especially at schools. Waiting for a building to open and/or waiting for buses necessitates shelter from precipitation in most parts of the country. In the Sun Belt it is also helpful to have covered sidewalks for shade. These features complement the building and provide convenience for the users. A building that serves the public will also present a more favorable environment if entrances include roofed sections over the entrance-way.

6.5 Building materials provide attractive color and texture. (5)

Whether the school is constructed of wood, concrete, cement block or brick, the environment is affected by the type of material and texture. Buildings often include several different exterior materials and in this way present a desirable appearance. Color as well as texture affects the way one feels about the structure. The building should have warmth. In a warm climate the structure should present a cooling effect just by its color and texture.

6.6 Color schemes, building materials and decor provide an impetus to learning. (20)

There is considerable research showing that the color has a very definite effect on the occupants of a room. Such conclusions are especially relevant to educational settings. A feeling of warmth results from the use of red, yellow, orange and rich brown in furnishings. A room can be made to create a cool feeling through a decor emphasizing blue, green, pale neutrals and white. The warm colors tend to produce increased activity while the cool colors foster relaxation.

The lines and shapes of furniture and equipment also have an effect on the environment. Even the way in which furnishings are grouped leads to differences in psychological reactions.

Many new schools use graphics and bold designs on large wall areas because these features are stimulating, and are well accepted by young people.

6.7 Year around comfortable temperature is provided throughout the building. (15)

The learning environment reflects increased quality if the temperature is properly maintained. Teachers in general express dissatisfaction with the heating and cooling of their buildings. Any time that one is conscious of the room temperature it is probably not appropriate at least for the needs of that specific individual. Therein lies the problem, the considerable range of individual assessment of temperature.

Heating and cooling systems often are not properly balanced throughout the building. Often the rooms or zone controls are not made accessible to teachers or the thermostat provided does not actually control anything.

Many classrooms become overheated by the release of body heat from the occupants and/or the absorption of solar heat during the day. Building orientation and roof deck overhang may greatly affect this condition. Although air-conditioning (climate control) is becoming common in newer schools, most older schools throughout the country do not have air-conditioning. Research in education has not, in the past, justified air-conditioning in school. More recently there has been general acceptance of the fact that a proper classroom environment must include climate control. Quality environment is difficult to assure without a means of keeping classrooms at an acceptable temperature.

6.8 Ventilating system provides adequate circulation of clean air. (15)

Often the lack of ventilation rather than the temperature is the source of the problem relating to room comfort. Experts claim that a minimum of 10-15 cubic feet of fresh air per student per minute is adequate for the normal classroom. Some special areas, such as shower rooms, need greater amounts of ventilation to reduce the excess moisture in the air.

Mechanical systems present two types of problems. Air filters require regular maintenance. Air circulation is impeded if filters become clogged from dirt. The ventilating system also may be unduly noisy to the extent that instruction is hindered. Ventilating fans in large areas may be extremely noisy to the extent that use of such areas for assemblies is made difficult.

6.9 Lighting system provides proper intensity, diffusion, and distribution of illumination. (15)

The lighting of a room is a very important factor in the way one feels about the environment. Item 2.10 addresses the light fixtures and the appropriate quality of illumination needed for various instructional settings. Consideration needs to be given also to other aspects of the lighting. Intensity refers to the degree of brightness emitted by the illuminaire. Diffusion is related to the manner in which the light is reflected by ceiling or sidewalls. Distribution is how well the fixtures provide light in equal quantities to all areas of the room.

It has been shown through research in Arkansas and Alberta, Canada that the behavior of students is affected by the type of fluorescent lights. Cool white fluorescent, for a protracted length of time tend to make students lethargic. Full spectrum fluorescent tubes tends to improve the behavior of children. The educational environment is influenced by the lighting provided in the instructional areas.

6.10 Drinking fountains and restroom facilities are conveniently located. (15)

Standards for these necessities are given in 2.13. Here the emphasis is on the way in which drinking fountains and restrooms aid the environment. These very functional needs are obviously best planned when location is given major consideration. These services should be available to students and faculty on each floor of the building. Large group areas should always have these services nearby. Schools with extended wings need water and restrooms at easily accessible locations.

Location in terms of distances is an important aspect. However, the environment can be made pleasing when these facilities can be easily found. Some authorities contend that buildings should reflect a natural order of things so that occupants (and especially first time visitors) will be led by their own logic to the location of these services.

6.11 Communication among students is enhanced by common area(s) for socialization. (10)

Learning theory emphasizes the importance of the socializing process in school. Much of this occurs in non-classroom settings. The Commons has become recognized as an important part of the school, especially for middle and high school students. Such large areas serve as a place enabling students to gather, converse, share ideas and strengthen their identity with the school.
The size of the space needs to be adequate to avoid crowding. Small group benches are desirable and the aesthetics of the area can add greatly to the atmosphere of the building. The Commons is usually centrally located and may be adjacent to the library and/or the cafeteria.

In elementary schools, the multi-purpose area often serves the function of a Commons.

6.12 Traffic flow is aided by appropriate foyers and corridors. (10)

The interior environment will be greatly enhanced with a feeling of openness. This does not necessarily require an open concept design, although the benefits from such schools add much to the psychological environment. Corridors should be conveniently wide and should lead to commons or other areas where the student can find relief from the "egg crate" feeling of the very conventional buildings found in many school districts. In addition to the ease of movement in the building, there are times when administrators need to control access to certain areas. Every school, except perhaps the very small, needs to have corridor gates or barricades. From a users view, such arrangements easily communicate which sections of the building are open at any specific time. Such arrangements are especially helpful during community use of the school.

6.13 Areas for students to interact are suitable to the age group. (10)

The emphasis here is on quality of space. The need for this space has been justified elsewhere. The space needs to be appropriately finished and decorated. Places to sit and converse are essential. Fixed benches and some group settings of furniture help to create a pleasing environment. Plantings of greenery can produce a desirable effect. Painting and lighting are factors to be considered in evaluating this space.

6.14 Large group areas are designed for effective management of students. (10)

The large group areas referred to are those used for instruction, such as gymnasiums, auditoriums, multi-purpose rooms, music rooms and libraries. These areas should be designed for visual supervision of students. Narrow hallways, alcoves, visual barriers and partial walls may deter the teaching function and lead to student misconduct.

The use of carpeting in large group areas tend to inhibit sound and adds to the decor. Some provision for sound control creates a more pleasant environment. Convenient locations of light switches and outlets permit more convenient use of this space.

6.15 Acoustical treatment of ceiling, walls and floors provides effective sound control. (10)

Whether the instructional space is a regular classroom, an auditorium or music room, the areas will be more effective for teaching and learning if reasonable effort is made to control sound. For the ceilings the treatment usually is acoustical plaster or acoustical tile. In special areas additional treatment may be needed. The sidewalls can be made to reduce sound through the use of draperies, small areas of acoustical tile or other materials that decrease the amount of sound reverberation.

Floors are made sound absorbent through the use of carpet. This type of floor covering probably does more to improve the acoustics in the room than any other sound control material. At the same time the visual environment is greatly improved.

6.16 Window design contributes to a pleasant environment. (10)

The design of windows in schools is a topic of much discussion. Windows in schools increase the costs, in terms of construction and maintenance. However, most individuals, teachers and students state a preference for some use of windows. The lack of windows makes it almost a necessity to close school anytime there is an extended power failure. At least one state, recently enacted a law requiring operable windows in all new classrooms.

The intent here is not to accept any one solution to this controversy but to acknowledge that the potential for a quality educational environment is increased with at least a minimal visual strip for each instructional space. The way in which the building design provides for appropriate fenestration is a significant factor.

6.17 Furniture and equipment provide a pleasing atmosphere. (10)

This item is addressed in part in 6.6. In addition to the previous comments, a pleasing atmosphere is important in the context of the specific student group. For younger children large display areas can be important. Such areas often are provided bulletin boards to which student work can be attached. Sometimes large wall sections can be covered with vinyl, burlap or carpet to create convenient colorful pin-up display areas.

For older students display cases are widely used. Sometimes these are associated with subject areas with access within the classroom for arrangement. Viewing is typically from a corridor.

It is important that the scale (size) of the furnishings be consistent with the age group. Small children who see only the lower portion of the school environment can be overwhelmed by large objects designed for the adult world. High school students are adults (or nearly so) and want their environment to reflect on an adult scale.

Glossary

ACADEMIC LEARNING AREA — A space designated for teacher/student activity, usually in content areas, such as English, History and Mathematics.

ACCESS STREETS — Vehicular traffic area leading to the site.

ACOUSTICAL PLASTER — A wall or ceiling covering designed to absorb sound waves.

ALCOVE — A semi-separated area designed for study or counseling.

APPRAISAL — An evaluation of specific components by a knowledgeable person.

BARRIER-FREENESS — A condition in which no physical barriers exist in the building which denies a person access to any part of the building or program.

BUILDING ENVELOPE — The facade, or surrounding surface, of a structure.

BUILDING ORIENTATION — The manner in which the physical structure is placed on the site so as to take advantage of daylighting, climatic and aesthetic factors.

CAFETORIUM — An area designed to function as both a cafeteria and an auditorium.

CAMPUS — Everything contained within the boundaries of a school site.

CEILING SPRINKLER — The portion of a fire suppression system which releases a spray of water upon an area.

CERAMIC TILE — A clay product with an impervious, glazed surface designed for long wear and easy cleaning.

CLERESTORY — A row of glass located immediately beneath the roof line on an external wall which allows natural light to enter the interior space.

CLIMATE CONTROL — An adjustable electrical or mechanical thermostatic device which interfaces with a heating and/or cooling mechanism initiating or terminating its function.

CLINIC — That portion of a facility which houses health services.

COMMONS — An area designated for informal student gathering.

COMPACT DESIGN — A design which produces a high ratio of internal space per linear foot of external wall.

CORRECT SLOPE — The graduation of a ramp to conform with barrier-free requirements.

CURB CUT — A gentle sloped ramp connecting sidewalks and adjacent parking areas which allows passage of disabled pedestrians.

CUSTODIAL CLOSET — The space designed for storage and service of cleaning equipment and supplies.

DEAD-END CORRIDOR — A hallway with only one direction of egress.

DECOR — The style and layout of interior furnishings.

DEMONSTRATION SPACE — An area in which theoretical concepts can be shown through practical example.

DRAINAGE SYSTEM — Pipe used for removal of waste water and sewage.

EGG CRATE DESIGN — Layout exemplifying a typical double-loaded corridor, or a single hallway with opposing classrooms.

EGRESS — The act, place or means of leaving a building.

ELEVATION — A measured height above a known level, or a plan showing such height in a building design.

ENERGY MANAGEMENT — The administration of fossil fuel utilization.

ENERGY SOURCE — Origin of usable energy.

ENVIRONMENT — That which surrounds, the elements or the control of the elements.

EPOXY PAINT — A chemical composition containing color pigments which cures with a super hard, impervious surface easily cleaned.

EROSION — A physical or chemical removal of existing substances which leaves a rough or scarred surface.

EXFILTRATION — The loss of interior air through openings in the building envelope.

EXPANSION JOINTS — A designed break in ceilings, walls and floors which allows controlled thermodynamic expansion and contraction to occur between solids thus preventing cracking.

FACE BRICK — Brick used on the exterior of a building.

FASCIA — A board fastened to the rafters on the outside of the building.

FENESTRATION — The arrangement, proportioning and design of windows and doors in a building.

FINGER DESIGN — The layout of a building which includes double-loaded corridors projecting from a central structure to allow balanced natural lighting and ventilation.

FIRE ESCAPE — A planned second egress from a second story for emergency purposes.

FIRE RESISTANT — Building materials selected for natural ability to retard combustion.

FIXED PROJECTION SCREEN — A reflective surface designed or permanently placed for visual instruction.

FIXED WINDOWS — Non-movable light transferring wall materials which allow no egress.

FLOORS SCRUBBER — A portable, mechanical device used for cleaning floor surfaces.

FLUORESCENT TUBE — A glass tube containing gasses which glow brightly when charged with an electrical current.

FOOT CANDLE — A measurement of light equal to that emitted by a candle at a distance of one foot.

FORMICA — A surface of laminated plastic products.

FOYER — An entrance hallway or lobby.

FRIABLE ASBESTOS — A natural mineral fiber which can be easily separated from the mother material.

FULL SPECTRUM LIGHTING — A complete dispersion of light energy including all wavelengths.

HEATING UNIT — A mechanical device which releases and disperses energy from a stored source.

HIP ROOF — One that slopes upward from the four sides of the building.

ILLUMINATION — Light energy provided to illumine interior or exterior.

INFILTRATION — The intrusion of undesirable elements, such as heat, through the building envelope.

INTERNAL HEAT GAIN — Uncontrolled temperature rise caused by sunlight passing through windows, doors or skylight, or from the body of heat of building occupants.

JOIST — Structural members which support floors, ceilings and roofs.

LARGE GROUP AREAS — Interior spaces designed to accommodate numbers larger than that of a normal class.

LAVATORY -- Restroom or the hand washing facility located within a restroom.

LIGHT METER — A devise to measure the amount of reflected light.

LIGHT SOURCE — The origin of natural or man made light within a facility such as a window, door, skylight, fluorescent tube or incandescent lamp.

LOAD BEARING — Vertical structural member which support ceilings and/or roofs.

LOBBY — That space in a building that serves as an informal gathering area generally located near the main entrance.

MASONRY — Construction utilizing stone, brick or concrete.

MULTI-PURPOSE AREA — Internal space created for several uses such as play, assembly and dining.

NOISE POLLUTION — The infiltration of unwanted or uncontrolled sound at a level above that which is comfortable to the human ear.

NON-INSTITUTIONALIZED ENVIRONMENT — A warm, soft atmosphere created to be comfortable to the human psyche.

OFF-SITE SIDEWALKS — Improved pedestrian traffic areas located adjacent to the school site.

OPEN-SPACE CONCEPT — A spacious, unfettered atmosphere created when individual classrooms are not separated by complete walls.

OPEN WATER — Puddles, ponds and swampy areas on a school site created by uneven elevations and impervious or semi-impervious soils.

OPERABLE WINDOWS — Windows which can be easily opened or closed.

OUTDOOR LEARNING LABORATORY — External areas which allow teachers and students to enter and study the natural environment.

PANIC BARS — Hardware attached to the inside of external doors which releases the latch when pushed outward, sometimes referred to as panic hardware.

PEDESTRIAN TRAFFIC — The flow or movement of persons on foot or in wheelchairs.

PLANT MAINTAINABILITY — Design features of a facility which aid the cleaning and maintenance functions.

POST-OCCUPANCY REVIEW — A complete audit or evaluation of a facility immediately following its being placed in use to determine its usability and durability.

PRE-FINISHED METAL — Exposed metal, either structure or facade, the surface of which is durable, easily cleaned and attractive.

RAMP — An inclined surface connecting different levels of flow space which allows easy movement by disabled persons.

RECEPTION AREA — (See Lobby)

RECESSED DOORS — Doors opening into hallways designed so as not to extend into the flow space or impede traffic flow.

RECORDS STORAGE — A fireproof, controlled access area providing safe storage of non-replaceable items such as students permanent records.

REST ROOM — A toilet, sometimes improperly called a lavatory.

SAFETY GLASS — Glass with plastic or wire laminated within to prevent splintering when broken.

SITE UTILIZATION PLAN — A plan for placement of structures, walks, parking and other uses of the land.

SLAB ON GRADE — A concrete foundation which forms the ground floor and which is not raised appreciably above the surrounding ground level.

SMOKE DETECTOR — An electrical device which senses the presence of smoke particles in the air and sounds or activates fire extinguishing equipment.

SOLAR HEAT — Heat transferring device utilizing sunlight as a source of energy.

SOLID SURFACE PARKING — Parking areas with an improved surface to provide natural and easy removal of accumulated dirt, water, snow and ice for cleanliness and safety.

SPECIAL LEARNING AREA — Space provided for study of particular topics or by particular audiences.

SPRINKLER SYSTEM — Self-actuated fire extinguishers placed at strategic points throughout the building.

STAIR RISER — Individual stair steps.

STRUCTURAL AND MECHANICAL DESIGN — The strategic selection and placement of support and auxiliary control systems for strength, economy and utilization.

STRUCTURAL SLAB — Concrete floor providing both strength and a barrier.

STUDENT TRAFFIC PATTERN — An area designed primarily as flow space.

STUCCO — A mixture of concrete or plaster used as a covering for interior or exterior walls.

SUSPENDED ACOUSTICAL PANELS — Fiberglass or fibrous materials suspended to form a ceiling designed to absorb sound waves.

TEACHING STATION — Specific locations associated with a learning area designed to provide a support system for instruction.

TERRAZZO — A very hard, impervious floor surface that is long wearing and easily maintained.

TOPOGRAPHY — The distinctive surface features that is long wearing and easily maintained.

TOXIC MATERIALS — Substances which are poisonous to humans or animals.

VEHICULAR TRAFFIC — The movement of automobiles or buses on or adjacent to the school site.

VISUAL BARRIER — Walls, furniture, etc. which impedes light or view.

VISUAL STRIP — An area which allows vision or visual control.

WAINSCOT — Interior wood paneling, usually covering the lower three feet of a wall, which differs from the rest of the wall.

WALL GRAPHICS — Pictures, drawings or writing usually painted on wall surfaces.

WATER OUTLET — Faucets or fountains.

ZONE CONTROLS — Barriers which accommodate separation of heating, cooling or lighting facilities.

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Instrument for Elementary School Appraisal

Guide for School Facility Appraisal

by

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Directions for Appraising Facilities

Elementary School Appraisal

Prior to evaluating a building, the appraiser should become familiar with the educational program provided within the existing school facility. It is essential also to determine other pertinent factors about the facility which will provide background information sufficient to insure a thorough and accurate appraisal. Particularly helpful are the building's architectural plans, specifications and layout, if these are available. If possible, the school plant should be appraised at a time when school is in session so that the actual use of the building is more apparent.

Although the Appraisal Guide is designed for individual appraiser use, ideally the school facility should be evaluated at the same time by three to five appraisers. A comparison and averaging of the several appraisals will result in a more objective overall rating.

The instrument uses an additive scoring method, with each item having a maximum number of allowable points. A total of 1000 points is distributed among these six major categories:

Section		Maximum Points
1.0	The School Site	100
2.0	Structural and Mechanical Features	200
3.0	Plant Maintainability	100
4.0	School Building Safety and Security	200
5.0	Educational Adequacy	200
6.0	Environment for Education	200

Prior to Appraisal — Step I

Prior to Appraisal. Review educational program; identify the number of faculty members and students; and examine the floor and plot plans carefully.

Overview of the Building and Grounds — Step II

Overview of the Building and Grounds. Upon approach to the site look for traffic patterns, school safety signs, neighborhood environment, etc. Begin the appraisal by taking a preliminary tour of the entire building noting both exterior and interior features. Information obtained prior to arrival at the campus recorded in the Building Data Record should be verified. The appraisal weights should not be determined during this initial walk through. The appraisal is better accomplished as separate individual steps in the process.

Assignment of Scores — Step III

Assignment of Scores. After the completion of the preliminary inspection, go through the entire instrument section by section. The appraisal will be more accurate if each item is carefully considered while it is appropriately observed. **Do not try to evaluate from memory** — use actual observation when making the appraisal decision.

Items that are needed (required) but are non-existent should be given a 0 score. If an item is not needed and is non-existent full credit should be allowed.

Note the Table of Weights for assistance in determining the score to be given each item. Each item should be considered in the following terms: Non-Existent, Very Inadequate, Poor, Borderline, Satisfactory, and Excellent.

Place score in space provided in the Points Allotted Column, total the score for each Section and insert in the space provided. The Section totals should then be tabulated and indicated in the Points Assigned column of the Appraisal Summary. Use the space provided in the Justification for Allocation of Points to provide notes justifying the scores given at the extreme ends of the scale.

Building Data Record

Elementary School Appraisal

Name of Appraiser _____ **Date of Appraisal** _____

Building Name _____

Street Address _____

City/Town, State, Zip Code _____

Telephone Number(s) _____

School District _____

Setting ☐ Urban ☐ Suburban ☐ Small City ☐ Rural

Site Acreage _____ Building Square Footage _____

Grades Housed _____ Student Capacity _____

Number of Teaching Stations _____ Number of Floors _____

Student Enrollment _____ As Of _____

Dates of Construction _____

Energy Sources: ☐ Fuel Oil ☐ Gas ☐ Electric ☐ Solar

Air Conditioning ☐ Roof Top ☐ Window Units ☐ Central ☐ Room Units

Heating ☐ Central ☐ Roof Top ☐ Individual Unit
☐ Forced Air ☐ Steam ☐ Hot Water

Type of Construction
- ☐ load bearing masonry
- ☐ steel frame
- ☐ concrete frame
- ☐ wood
- ☐ other _____

Exterior Surfacing
- ☐ brick
- ☐ stucco
- ☐ metal
- ☐ wood
- ☐ other _____

Floor Construction
- ☐ wood joists
- ☐ steel joists
- ☐ slab on grade
- ☐ structural slab
- ☐ other _____

Appraisal Guide for School Facilities

Elementary School Appraisal

Table of Weights and Categories

Maximum Points Allotted	Non-Existent	Very Inadequate 1-29%	Poor 30-49%	Borderline 50-69%	Satis-factory 70-89%	Excellent 90-100%
5	0	1	2	3	4	5
10	0	2	4	6	8	10
15	0	3	6	9	12	15
20	0	4	8	12	16	20
25	0	5	10	15	20	25

Appraisal Summary

Section	Possible Points	Total Earned	Per Cent	Rating Category
1.0 The School Site	100			
2.0 Structural & Mechanical	200			
3.0 Plant Maintainability	100			
4.0 School Building Safety and Security	200			
5.0 Educational Adequacy	200			
6.0 Environment For Education	200			
TOTAL	**1000**			

1.0 The School Site

Elementary School Appraisal ***100 Points***

		Points Allocated	Points Assigned
1.1	**Site is large enough** to meet educational needs as defined by state and local requirements.	25	
1.2	**Site is easily accessible** and conveniently located for the present and future population.	20	
1.3	**Location** is removed from undesirable business, industry, and traffic.	10	
1.4	Site is large enough for **future expansion**, if needed.	5	
1.5	**Topography** is varied enough to provide desired appearance but without steep inclines.	5	
1.6	Site is **well landscaped**.	5	
1.7	Site has stable, well drained **soil free of erosion.**	5	
1.8	Site is suitable for **special instructional needs**, e.g. outdoor learning.	5	
1.9	**Pedestrian services** include adequate sidewalks with designated crosswalks, curb cuts, and correct slopes.	5	
1.10	Sufficient **on-site, solid surface parking** for faculty and staff is provided.	5	
1.11	**Playgrounds are separated** from streets and parking areas.	5	
1.12	Playgrounds are **well equipped** and **appropriate for the age** levels.	5	
	TOTAL — THE SCHOOL SITE	**100**	

2.0 Structural and Mechanical Features

Elementary School Appraisal ***200 Points***

STRUCTURAL		Points Allocated	Points Assigned
2.1	Structure meets all **barrier-free** requirements both externally and internally.	15	_____
2.2	**Roofs** appear sound, have positive drainage, and are weather tight.	15	_____
2.3	**Foundations** are strong and stable with no observable cracks.	10	_____
2.4	**Exterior and interior walls** have sufficient expansion joints and are free of deterioration.	10	_____
2.5	**Entrances and exits** are located so as to permit efficient student traffic flow.	10	_____
2.6	**Building "envelope"** generally provides for energy conservation. (See criteria)	10	_____
2.7	Structure is **free of friable asbestos** and **toxic materials**.	10	_____
2.8	Interior walls permit sufficient **flexibility** for a variety of class sizes.	5	_____
2.9	Well maintained **ceilings** adequately retard sound.	5	_____

MECHANICAL/ELECTRICAL		Points Allocated	Points Assigned
2.10	**Adequate light sources**, well maintained, and properly placed are provided.	15	
2.11	**Electrical controls** are safely protected with **disconnect switches** easily accessible.	10	
2.12	**Labeled electrical system** is not subject to over-heating.	10	
2.13	**Drinking fountains** are adequate in number and placement, and are properly maintained including provisions for the disabled.	10	
2.14	Number and size of **restrooms meet requirements**.	10	
2.15	**Internal water supply** is adequate with sufficient pressure to meet health and safety requirements.	10	
2.16	**Drainage systems** are properly maintained and meet requirements.	10	
2.17	**Fire alarms, smoke detectors, and sprinkler systems** are properly maintained and meet requirements.	10	
2.18	**Intercommunication system** consists of a central unit that allows dependable **two-way communication** between the office and instructional areas.	10	
2.19	**Underground electrical service** is provided.	5	
2.20	**Exterior water supply** is sufficient and available for normal usage.	5	
2.21	Each teaching/learning area has four or more convenient **wall outlets**.	5	
	TOTAL — STRUCTURAL AND MECHANICAL FEATURES	**200**	

3.0 Plant Maintainability

Elementary School Appraisal ***100 Points***

		Points Allocated	Points Assigned
3.1	**Windows, doors, and walls** are of material and finish requiring minimum maintenance.	10	
3.2	**Outdoor light fixtures, electric outlets**, equipment, and other fixtures are accessible for repair and replacement.	10	
3.3	**Floor coverings** throughout the building require minimum care	10	
3.4	**Ceilings and walls** throughout the building, including service areas, are easily cleaned and resistant to stain.	10	
3.5	**Built-in equipment** is designed and constructed for ease of maintenance.	10	
3.6	**Floors** in restrooms, kitchens, cafeterias, and corridors require a minimum of maintenance.	10	
3.7	**Hardware and finishes** are of durable quality.	10	
3.8	**Restroom fixtures** are wall mounted and of quality finish.	10	
3.9	Adequate **custodial storage space** with water and drain is accessible throughout the building.	10	
3.10	Adequate **electrical outlets and power** are available in every area to permit routine cleaning.	10	
	TOTAL — PLANT MAINTAINABILITY	**100**	

4.0 Building Safety and Security

Elementary School Appraisal ***200 Points***

	SITE SAFETY	Points Allocated	Points Assigned
4.1	**Student loading areas** are segregated from other vehicular traffic and pedestrian walkways.	15	
4.2	**Access streets** have sufficient signals and signs to permit safe entrance to and exit from school area.	5	
4.3	**Off-site sidewalks** are available for safety of pedestrians.	5	
4.4	**On-site sidewalks** and steps are designed and maintained for safety.	5	
4.5	**Vehicular entrances and exits** permit safe traffic flow.	5	
4.6	Locations and types of **playground equipment** are free from hazard.	5	
	BUILDING SAFETY		
4.7	The **heating unit(s)** is located away from student occupied areas.	20	
4.8	Multi-story buildings have at least **two stairways**.	15	
4.9	**Exterior doors** open outward and are equipped with panic hardware.	10	
4.10	**Emergency lighting** is provided throughout the building with exit signs on separate electrical circuits.	10	
4.11	**Classroom doors** are recessed and open outward.	10	
4.12	**Building security systems** are provided to assure uninterrupted operation of the educational program.	10	

		Points Allocated	Points Assigned
4.13	**Flooring** (including ramps and stairways) is maintained in a nonslip condition.	5	
4.14	**Stair risers** (interior and exterior) do not exceed 6 1/2 inches and range in number from 3 - 16.	5	
4.15	**Glass** is properly located and protected with wire or safety material to prevent accidental student injury.	5	
4.16	**Fixed projections** in the traffic areas do not extend more than eight inches from the corridor wall.	5	
4.17	**Traffic areas** terminate at an exit or a stairway leading to an egress.	5	
	EMERGENCY SAFETY		
4.18	Adequate **fire safety equipment** is properly located.	15	
4.19	There are at least **two independent exits** from any point in the building.	10	
4.20	Stairways and exits are of **noncombustible material**.	10	
4.21	**Fire-resistant materials** are used throughout the structure.	10	
4.22	Automatic and manual **emergency alarm system** with a distinctive sound and flashing light is provided.	10	
4.23	Ample space is provided in **corridors or protected areas** for student safety in the event of natural disasters.	5	
	TOTAL — BUILDING SAFETY AND SECURITY	**200**	

5.0 Educational Adequacy

Elementary School Appraisal ***200 Points***

	ACADEMIC LEARNING SPACE	Points Allocated	Points Assigned
5.1	**Size of academic learning areas** meets desirable standards.	25	
5.2	**Classroom space** permits arrangements for small group activity.	15	
5.3	**Location of academic learning areas** is near related educational activities and away from disruptive noises.	10	
5.4	**Personal space** in the classroom away from group instruction allows privacy time for individual students.	10	
5.5	**Storage for student materials** is adequate.	10	
5.6	**Storage for teacher materials** is adequate.	10	
	SPECIAL LEARNING SPACE		
5.7	**Size of special learning area(s)** meets standards.	15	
5.8	**Design of special learning area(s)** is compatible with instructional need.	10	
5.9	**Library/Resource/Media Center** provides appropriate and attractive space.	10	
5.10	**Gymnasium (or covered P.E. area)** adequately serves physical education instruction.	5	
5.11	**Pre-kindergarten and kindergarten space** is appropriate for age of students and nature of instruction.	10	
5.12	**Music Program** is provided adequate sound-treated space.	5	

		Points Allocated	Points Assigned
5.13	**Space for art** is appropriate for special instruction, supplies, and equipment.	5	
5.14	**Space for technology education**, including computer labs, permits use of state-of-the-art equipment.	5	
5.15	Space adjacent to classrooms is provided for **small groups and remedial instruction**.	5	
5.16	**Storage for student and teacher material** is adequate.	5	
	SUPPORT SPACE		
5.17	**Teachers' lounge and work areas** reflect teachers as professionals.	10	
5.18	**Cafeteria/cafetorium** is attractive with sufficient space for delivery, storage, and food preparation.	10	
5.19	**Administrative offices** provide an appearance consistent with the maturity of the students served.	5	
5.20	**Counselor's office** insures privacy and sufficient storage.	5	
5.21	**Clinic** is near administrative offices and is equipped to meet requirements.	5	
5.22	**Suitable reception space** is available for students, teachers, and visitors.	5	
5.23	**Administrative personnel** are provided **sufficient work space and privacy**.	5	
	TOTAL — EDUCATIONAL ADEQUACY	**200**	

6.0 Environment for Education

Elementary School Appraisal — ***200 Points***

EXTERIOR ENVIRONMENT		Points Allocated	Points Assigned
6.1	Overall **design is aesthetically pleasing** to age of students.	15	
6.2	Site and building are **well landscaped**.	10	
6.3	**Exterior noise and poor environment** do not disrupt learning.	10	
6.4	**Entrances and walkways are sheltered** from sun and inclement weather.	10	
6.5	**Building materials** provide attractive color and texture.	5	

INTERIOR ENVIRONMENT		Points Allocated	Points Assigned
6.6	**Color schemes, building materials, and decor** provide an impetus to learning.	20	
6.7	**Year around comfortable temperature** is provided throughout the building.	15	
6.8	**Ventilating system** provides adequate circulation of clean air.	15	
6.9	**Lighting system** provides proper intensity, diffusion, and distribution of illumination.	15	
6.10	**Drinking fountains and restroom facilities** are conveniently located.	15	
6.11	**Communication among students** is enhanced by commons area(s) for socialization.	10	
6.12	**Traffic flow** is aided by appropriate foyers and corridors.	10	

6.13	**Areas for students to interact** are suitable to the age group.	10	_____
6.14	**Large group areas** are designed for effective management of students.	10	_____
6.15	**Acoustical treatment** of ceilings, walls, and floors provides effective sound control.	10	_____
6.16	**Window design** contributes to a pleasant environment.	10	_____
6.17	**Furniture and equipment** provide a pleasing atmosphere.	10	_____
	TOTAL — ENVIRONMENT FOR EDUCATION	**200**	

Justification for Allocation of Points

Elementary School Appraisal

Building Name and Level:

Indicate the justification for the appraisal decision in the space provided.

Building features that clearly exceed criteria:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Building features that are non-existent or very inadequate:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Instrument for Middle School Appraisal

Guide for School Facility Appraisal

by

Harold L. Hawkins, Ed.D.
and
H. Edward Lilley, Ph.D.

The Council of Educational Facility Planners, International

Directions for Appraising Facilities

Middle School Appraisal

Prior to evaluating a building, the appraiser should become familiar with the educational program provided within the existing school facility. It is essential also to determine other pertinent factors about the facility which will provide background information sufficient to insure a thorough and accurate appraisal. Particularly helpful are the building's architectural plans, specifications and layout, if these are available. If possible, the school plant should be appraised at a time when school is in session so that the actual use of the building is more apparent.

Although the Appraisal Guide is designed for individual appraiser use, ideally the school facility should be evaluated at the same time by three to five appraisers. A comparison and averaging of the several appraisals will result in a more objective overall rating.

The instrument uses an additive scoring method, with each item having a maximum number of allowable points. A total of 1000 points is distributed among these six major categories:

Section	Maximum Points
1.0 The School Site	100
2.0 Structural and Mechanical Features	200
3.0 Plant Maintainability	100
4.0 School Building Safety and Security	200
5.0 Educational Adequacy	200
6.0 Environment for Education	200

Prior to Appraisal — Step I

Prior to Appraisal: review educational program; identify the number of faculty members and students; and examine the floor and plot plans carefully.

Overview of the Building and Grounds — Step II

Overview of the Building and Grounds: Upon approach to the site look for traffic patterns, school safety signs, neighborhood environment, etc. Begin the appraisal by taking a preliminary tour of the entire building noting both exterior and interior features. Information obtained prior to arrival at the campus recorded in the Building Data Record should be verified. The appraisal weights should not be determined during this initial walk through. The appraisal is better accomplished as separate individual steps in the process.

Assignment of Scores — Step III

Assignment of Scores: After the completion of the preliminary inspection, go through the entire instrument section by section. The appraisal will be more accurate if each item is carefully considered while it is appropriately observed. **Do not try to evaluate from memory** — use actual observation when making the appraisal decision.

Items that are needed (required) but are non-existent should be given a 0 score. If an item is not needed and is non-existent full credit should be allowed.

Note the Table of Weights for assistance in determining the score to be given each item. Each item should be considered in the following terms: Non-Existent, Very Inadequate, Poor, Borderline, Satisfactory, and Excellent.

Place score in space provided in the Points Allotted Column, total the score for each Section and insert in the space provided. The Section totals should then be tabulated and indicated in the Points Assigned column of the Appraisal Summary. Use the space provided in the Justification for Allocation of Points to provide notes justifying the scores given at the extreme ends of the scale.

Building Data Record

Middle School Appraisal _____

Name of Appraiser _____ **Date of Appraisal** _____

Building Name _____

Street Address _____

City/Town, State, Zip Code _____

Telephone Number(s) _____

School District _____

Setting ☐ Urban ☐ Suburban ☐ Small City ☐ Rural

Site Acreage _____ Building Square Footage _____

Grades Housed _____ Student Capacity _____

Number of Teaching Stations _____ Number of Floors _____

Student Enrollment _____ As Of _____

Dates of Construction _____

Energy Sources: ☐ Fuel Oil ☐ Gas ☐ Electric ☐ Solar

Air Conditioning ☐ Roof Top ☐ Window Units ☐ Central ☐ Room Units

Heating ☐ Central ☐ Roof Top ☐ Individual Unit
☐ Forced Air ☐ Steam ☐ Hot Water

Type of Construction
- ☐ load bearing masonry
- ☐ steel frame
- ☐ concrete frame
- ☐ wood
- ☐ other _____

Exterior Surfacing
- ☐ brick
- ☐ stucco
- ☐ metal
- ☐ wood
- ☐ other _____

Floor Construction
- ☐ wood joists
- ☐ steel joists
- ☐ slab on grade
- ☐ structural slab
- ☐ other _____

Appraisal Guide for School Facilities

Middle School Appraisal

Table of Weights and Categories

Maximum Points Allotted	Non-Existent	Very Inadequate 1-29%	Poor 30-49%	Borderline 50-69%	Satis-factory 70-89%	Excellent 90-100%
5	0	1	2	3	4	5
10	0	2	4	6	8	10
15	0	3	6	9	12	15
20	0	4	8	12	16	20
25	0	5	10	15	20	25

Appraisal Summary

Section	Possible Points	Total Earned	Per Cent	Rating Category
1.0 The School Site	100			
2.0 Structural & Mechanical	200			
3.0 Plant Maintainability	100			
4.0 School Building Safety and Security	200			
5.0 Educational Adequacy	200			
6.0 Environment For Education	200			
TOTAL	**1000**			

1.0 The School Site

Middle School Appraisal — ***100 Points***

		Points Allocated	Points Assigned
1.1	**Site is large enough** to meet educational needs as defined by state and local requirements.	25	
1.2	**Site is easily accessible** and conveniently located for the present and future population.	20	
1.3	**Location** is removed from undesirable business, industry, and traffic.	10	
1.4	Site is large enough for **future expansion**, if needed.	5	
1.5	**Topography** is varied enough to provide desired appearance but without steep inclines.	5	
1.6	Site is **well landscaped**.	5	
1.7	Site has stable, well drained **soil free of erosion.**	5	
1.8	Site is suitable for **special instructional needs**, e.g., outdoor learning.	5	
1.9	**Pedestrian services** include adequate sidewalks with designated crosswalks, curb cuts, and correct slopes.	5	
1.10	Sufficient **on-site solid, surface parking** for faculty and staff is provided.	5	
1.11	**Intramural athletic areas** are separated from streets and parking areas.	5	
1.12	**Intramural areas** are provided for a variety of youth activities.	5	
	TOTAL — THE SCHOOL SITE	**100**	

2.0 Structural and Mechanical Features

Middle School Appraisal ***200 Points***

STRUCTURAL		Points Allocated	Points Assigned
2.1	Structure meets all **barrier-free** requirements both externally and internally.	15	
2.2	**Roofs** appear sound, have positive drainage, and are weather tight.	15	
2.3	**Foundations** are strong and stable with no observable cracks.	10	
2.4	**Exterior and interior** walls have sufficient expansion joints and are free of deterioration.	10	
2.5	**Entrances and exits** are located so as to permit efficient student traffic flow.	10	
2.6	**Building "envelope"** generally provides for energy conservation. (See criteria)	10	
2.7	Structure is **free of friable asbestos** and **toxic materials**.	10	
2.8	Interior walls permit sufficient **flexibility** for a variety of class sizes.	5	
2.9	Well maintained **ceilings** adequately retard sound.	5	

MECHANICAL/ELECTRICAL		Points Allocated	Points Assigned
2.10	**Adequate light** sources,well maintained, and properly placed are provided.	15	
2.11	**Electrical controls** are safely protected with **disconnect switches** easily accessible.	10	
2.12	**Labeled electrical system** is not subject to over-heating.	10	
2.13	**Drinking fountains** are adequate in number and placement, and are properly maintained including provisions for the disabled.	10	
2.14	Number and size of **restrooms meet requirements**.	10	
2.15	**Internal water supply** is adequate with sufficient pressure to meet health and safety requirements.	10	
2.16	**Drainage systems** are properly maintained and meet requirements.	10	
2.17	**Fire alarms, smoke detectors, and sprinkler systems** are properly maintained and meet requirements.	10	
2.18	**Intercommunication system** consists of a central unit that allows dependable **two-way communication** between the office and instructional areas.	10	
2.19	**Underground electrical service** is provided.	5	
2.20	**Exterior water supply** is sufficient and available for normal usage.	5	
2.21	Each teaching/learning areas has four or more convenient **wall outlets.**	5	
	TOTAL — STRUCTURAL AND MECHANICAL FEATURES	**200**	

3.0 Plant Maintainability

Middle School Appraisal — ***100 Points***

		Points Allocated	Points Assigned
3.1	**Windows, doors, and walls** are of material and finish requiring minimum maintenance.	10	
3.2	**Outdoor light fixtures**, electric outlets, equipment, and other fixtures are accessible for repair and replacement.	10	
3.3	**Floor coverings** throughout the building require minimum care.	10	
3.4	**Ceilings and walls** throughout the building, including service areas, are easily cleaned and resistant to stain.	10	
3.5	**Built-in equipment** is designed and constructed for ease of maintenance.	10	
3.6	**Floors** in restrooms, kitchens, cafeterias, and corridors require a minimum of maintenance.	10	
3.7	**Hardware and finishes** are of durable quality.	10	
3.8	**Restroom fixtures** are wall mounted and of quality finish.	10	
3.9	Adequate **custodial storage** space with water and drain is accessible throughout the building.	10	
3.10	Adequate **electrical outlets and power** are available in every area to permit routine cleaning.	10	
	TOTAL — PLANT MAINTAINABILITY	**100**	

4.0 Building Safety and Security

Middle School Appraisal ***200 Points***

SITE SAFETY		Points Allocated	Points Assigned
4.1	**Student loading** areas are segregated from other vehicular traffic and pedestrian walkways.	15	_____
4.2	**Access streets** have sufficient signals and signs to permit safe entrance to and exit from school area.	5	_____
4.3	**Off-site sidewalks** are available for safety of pedestrians.	5	_____
4.4	**On-site sidewalks** and steps are designed and maintained for safety.	5	_____
4.5	**Vehicular entrances and exits** permit safe traffic flow.	5	_____
4.6	Locations and types of **playground equipment** are free from hazard.	5	_____
BUILDING SAFETY			
4.7	The **heating unit**(s) is located away from student occupied areas.	20	_____
4.8	Multi-story buildings have at **least two stairways**.	15	_____
4.9	**Exterior doors** open outward and are equipped with panic hardware.	10	_____
4.10	**Emergency lighting** is provided throughout the building with exit signs on separate electrical circuits.	10	_____
4.11	**Classroom doors** are recessed and open outward.	10	_____
4.12	**Building security systems** are provided to assure uninterrupted operation of the educational program.	10	_____

4.13	**Flooring** (including ramps and stairways) is maintained in a nonslip condition.	5	_____
4.14	**Stair risers** (interior and exterior) do not exceed 6 1/2 inches and range in number from 3 - 16.	5	_____
4.15	**Glass** is properly located and protected with wire or safety material to prevent accidental student injury.	5	_____
4.16	**Fixed projections** in the traffic areas do not extend more than eight inches from the corridor wall.	5	_____
4.17	**Traffic areas** terminate at an exit or a stairway leading to an egress.	5	_____

EMERGENCY SAFETY

4.18	Adequate **fire safety equipment** is properly located.	15	_____
4.19	There are at least **two independent exits** from any point in the building.	10	_____
4.20	Stairways and exits are of **noncombustible material**.	10	_____
4.21	**Fire-resistant materials** are used throughout the structure.	10	_____
4.22	Automatic and manual **emergency alarm system** with a distinctive sound and flashing light is provided.	10	_____
4.23	Ample space is provided in **corridors or protected areas** for student safety in the event of natural disasters.	5	_____
	TOTAL — BUILDING SAFETY AND SECURITY	**200**	

5.0 Educational Adequacy

Middle School Appraisal — ***200 Points***

ACADEMIC LEARNING SPACE		Points Allocated	Points Assigned
5.1	**Size of academic learning areas** meets desirable standards.	15	
5.2	**Classroom space** permits arrangements for small group activity.	10	
5.3	**Location of academic learning areas** is near related educational activities and away from disruptive noise.	10	
5.4	**Personal space** in the classroom away from group instruction allows privacy time for individual students.	5	
5.5	**Storage for student materials** is adequate.	5	
5.6	**Storage for teacher materials** is adequate.	5	
SPECIAL LEARNING SPACE			
5.7	**Size of special learning area(s)** meets standards.	15	
5.8	**Design of special learning area(s)** is compatible with instructional need.	10	
5.9	**Library/Resource/Media Center** provides appropriate and attractive space.	15	
5.10	**Gymnasium and out-door facilities** adequately serve physical education instruction.	10	
5.11	**Science** program is provided sufficient space and equipment.	10	
5.12	**Music** Program is provided adequate sound-treated space.	10	
5.13	**Space for art** is appropriate for special instruction, supplies, and equipment.	10	

5.14	Space for **technology education**, including computer labs, permits use of state-of-the-art equipment.	10	_____
5.15	Space adjacent to classrooms is provided for **small groups and remedial instruction**.	5	_____
5.16	**Storage for student and teacher material** is adequate.	5	_____

SUPPORT SPACE

5.17	**Teachers' lounge and work areas** reflect teachers as professionals.	10	_____
5.18	**Cafeteria/cafetorium** is attractive with sufficient space for delivery, storage, and food preparation.	10	_____
5.19	**Administrative offices** provide an appearance consistent with the maturity of the students served.	10	_____
5.20	**Counselor's office** insures privacy and sufficient storage.	5	_____
5.21	**Clinic** is near administrative offices and is equipped to meet requirements.	5	_____
5.22	**Suitable reception space** is available for students, teachers, and visitors.	5	_____
5.23	**Administrative personnel** are provided sufficient work space and privacy.	5	_____
	TOTAL — EDUCATIONAL ADEQUACY	200	

6.0 Environment for Education

Middle School Appraisal — ***200 Points***

EXTERIOR ENVIRONMENT		Points Allocated	Points Assigned
6.1	Overall **design is aesthetically pleasing** to age of students.	15	
6.2	Site and building are **well landscaped**.	10	
6.3	**Exterior noise** and poor environment do not disrupt learning.	10	
6.4	**Entrances and walkways** are sheltered from sun and inclement weather.	10	
6.5	**Building materials** provide attractive color and texture.	5	
INTERIOR-ENVIRONMENT			
6.6	**Color schemes, building materials, and decor** provide an impetus to learning.	20	
6.7	**Year around comfortable temperature** is provided throughout the building.	15	
6.8	**Ventilating system** provides adequate circulation of clean air.	15	
6.9	**Lighting system** provides proper intensity, diffusion, and distribution of illumination.	15	
6.10	**Drinking fountains and restroom facilities** are conveniently located.	15	
6.11	**Communication among students** is enhanced by commons area(s) for socialization.	10	
6.12	**Traffic flow** is aided by appropriate foyers and corridors.	10	

6.13	**Areas for students to interact** are suitable to the age group.	10	_____
6.14	**Large group areas are designed** for effective management of students.	10	_____
6.15	**Acoustical treatment** of ceilings, walls, and floors provides effective sound control.	10	_____
6.16	**Window design contributes** to a pleasant environment.	10	_____
6.17	**Furniture and equipment** provide a pleasing atmosphere.	10	_____
	TOTAL — ENVIRONMENT FOR EDUCATION	**200**	

Justification for Allocation of Points

Middle School Appraisal

Building Name and Level:

Indicate the justification for the appraisal decision in the space provided.

Building features that clearly exceed criteria:

1.

2.

3.

4.

5.

6.

Building features that are non-existent or very inadequate:

1.

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6.

Instrument for High School Appraisal

Guide for School Facility Appraisal

by

Harold L. Hawkins, Ed.D.
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The Council of Educational Facility Planners, International

Directions for Appraising Facilities

High School Appraisal

Prior to evaluating a building, the appraiser should become familiar with the educational program provided within the existing school facility. It is essential also to determine other pertinent factors about the facility which will provide background information sufficient to insure a thorough and accurate appraisal. Particularly helpful are the building's architectural plans, specifications and layout, if these are available. If possible, the school plant should be appraised at a time when school is in session so that the actual use of the building is more apparent.

Although the Appraisal Guide is designed for individual appraiser use, ideally the school facility should be evaluated at the same time by three to five appraisers. A comparison and averaging of the several appraisals will result in a more objective overall rating.

The instrument uses an additive scoring method, with each item having a maximum number of allowable points. A total of 1000 points is distributed among these six major categories:

Section	Maximum Points
1.0 The School Site	100
2.0 Structural and Mechanical Features	200
3.0 Plant Maintainability	100
4.0 School Building Safety and Security	200
5.0 Educational Adequacy	200
6.0 Environment for Education	200

Prior to Appraisal — Step I

Prior to Appraisal: review educational program; identify the number of faculty members and students; and examine the floor and plot plans carefully.

Overview of the Building and Grounds — Step II

Overview of the Building and Grounds: Upon approach to the site look for traffic patterns, school safety signs, neighborhood environment, etc. Begin the appraisal by taking a preliminary tour of the entire building noting both exterior and interior features. Information obtained prior to arrival at the campus recorded in the Building Data Record should be verified. The appraisal weights should not be determined during this initial walk through. The appraisal is better accomplished as separate individual steps in the process.

Assignment of Scores — Step III

Assignment of Scores: After the completion of the preliminary inspection, go through the entire instrument section by section. The appraisal will be more accurate if each item is carefully considered while it is appropriately observed. **Do not try to evaluate from memory** — use actual observation when making the appraisal decision.

Items that are needed (required) but are non-existent should be given a 0 score. If an item is not needed and is non-existent full credit should be allowed.

Note the Table of Weights for assistance in determining the score to be given each item. Each item should be considered in the following terms: Non-Existent, Very Inadequate, Poor, Borderline, Satisfactory, and Excellent.

Place score in space provided in the Points Allotted Column, total the score for each Section and insert in the space provided. The Section totals should then be tabulated and indicated in the Points Assigned column of the Appraisal Summary. Use the space provided in the Justification for Allocation of Points to provide notes justifying the scores given at the extreme ends of the scale.

Building Data Record

High School Appraisal

Name of Appraiser _____ **Date of Appraisal** _____

Building Name _____

Street Address _____

City/Town, State, Zip Code _____

Telephone Number(s) _____

School District _____

Setting ☐ Urban ☐ Suburban ☐ Small City ☐ Rural

Site Acreage _____ Building Square Footage _____

Grades Housed _____ Student Capacity _____

Number of Teaching Stations _____ Number of Floors _____

Student Enrollment _____ As Of _____

Dates of Construction _____

Energy Sources: ☐ Fuel Oil ☐ Gas ☐ Electric ☐ Solar

Air Conditioning ☐ Roof Top ☐ Window Units ☐ Central ☐ Room Units

Heating ☐ Central ☐ Roof Top ☐ Individual Unit
☐ Forced Air ☐ Steam ☐ Hot Water

Type of Construction
- ☐ load bearing masonry
- ☐ steel frame
- ☐ concrete frame
- ☐ wood
- ☐ other _____

Exterior Surfacing
- ☐ brick
- ☐ stucco
- ☐ metal
- ☐ wood
- ☐ other _____

Floor Construction
- ☐ wood joists
- ☐ steel joists
- ☐ slab on grade
- ☐ structural slab
- ☐ other _____

Appraisal Guide for School Facilities

High School Appraisal

Table of Weights and Categories

Maximum Points Allotted	Non-Existent	Very Inadequate 1-29%	Poor 30-49%	Borderline 50-69%	Satis-factory 70-89%	Excellent 90-100%
5	0	1	2	3	4	5
10	0	2	4	6	8	10
15	0	3	6	9	12	15
20	0	4	8	12	16	20
25	0	5	10	15	20	25

Appraisal Summary

Section	Possible Points	Total Earned	Per Cent	Rating Category
1.0 The School Site	100			
2.0 Structural & Mechanical	200			
3.0 Plant Maintainability	100			
4.0 School Building Safety and Security	200			
5.0 Educational Adequacy	200			
6.0 Environment For Education	200			
TOTAL	**1000**			

1.0 The School Site

High School Appraisal — ***100 Points***

		Points Allocated	Points Assigned
1.1	**Site is large enough** to meet educational needs as defined by state and local requirements.	25	
1.2	**Site is easily accessible** and conveniently located for the present and future population.	20	
1.3	**Location** is removed from undesirable business, industry, and traffic.	10	
1.4	Site is large enough for **future expansion**, if needed.	5	
1.5	**Topography** is varied enough to provide desired appearance but without steep inclines.	5	
1.6	Site is **well landscaped**.	5	
1.7	Site has stable, well drained **soil free of erosion**.	5	
1.8	Site is suitable for **special instructional needs**, e.g., outdoor learning.	5	
1.9	**Pedestrian services** include adequate sidewalks with designated crosswalks, curb cuts, and correct slopes.	5	
1.10	Sufficient **on-site, solid surface parking** for faculty, students, and staff is provided.	5	
1.11	**Athletic areas** are adequate with sufficient parking space.	5	
1.12	**Streets and parking areas** are well designed with solid surfaces.	5	
	TOTAL — THE SCHOOL SITE	**100**	

2.0 Structural and Mechanical Features

High School Appraisal ***200 Points***

STRUCTURAL		Points Allocated	Points Assigned
2.1	Structure meets all **barrier-free** requirements both externally and internally.	15	
2.2	**Roofs** appear sound, have positive drainage, and are weather tight.	15	
2.3	**Foundations** are strong and stable with no observable cracks.	10	
2.4	**Exterior and interior walls** have sufficient expansion joints and are free of deterioration.	10	
2.5	**Entrances and exits** are located so as to permit efficient student traffic flow.	10	
2.6	**Building "envelope"** generally provides for energy conservation. (See criteria)	10	
2.7	Structure is **free of friable asbestos** and **toxic materials**.	10	
2.8	Interior walls permit sufficient **flexibility** for a variety of class sizes.	5	
2.9	Well maintained **ceilings** adequately retard sound.	5	

MECHANICAL / ELECTRICAL		Points Allocated	Points Assigned
2.10	**Adequate light sources**,well maintained, and properly placed are provided.	15	
2.11	**Electrical controls** are safely protected with **disconnect switches** easily accessible.	10	
2.12	**Labeled electrical system** is not subject to over-heating.	10	
2.13	**Drinking fountains** are adequate in number and placement, and are properly maintained including provisions for the disabled.	10	
2.14	Number and size of **restrooms meet requirements**.	10	
2.15	**Internal water supply** is adequate with sufficient pressure to meet health and safety requirements.	10	
2.16	**Drainage systems** are properly maintained and meet requirements.	10	
2.17	**Fire alarms, smoke detectors, and sprinkler systems** are properly maintained and meet requirements.	10	
2.18	**Intercommunication system** consists of a central unit that allows dependable **two-way communication** between the office and instructional areas.	10	
2.19	**Underground electrical service** is provided.	5	
2.20	**Exterior water supply** is sufficient and available for normal usage.	5	
2.21	Each teaching/learning areas has four or more convenient **wall outlets**.	5	
	TOTAL — STRUCTURAL AND MECHANICAL FEATURES	**200**	

3.0 Plant Maintainability

High School Appraisal — ***100 Points***

		Points Allocated	Points Assigned
3.1	**Windows, doors, and walls** are of material and finish requiring minimum maintenance.	10	
3.2	**Outdoor light fixtures**, electric outlets, equipment, and other fixtures are accessible for repair and replacement.	10	
3.3	**Floor coverings** throughout the building require minimum care.	10	
3.4	**Ceilings and walls** throughout the building, including service areas, are easily cleaned and resistant to stain.	10	
3.5	**Built-in equipment** is designed and constructed for ease of maintenance.	10	
3.6	**Floors in restrooms**, kitchens, cafeterias, and corridors require a minimum of maintenance.	10	
3.7	**Hardware and finishes** are of durable quality.	10	
3.8	**Restroom fixtures** are wall mounted and of quality finish.	10	
3.9	Adequate **custodial storage space** with water and drain is accessible throughout the building.	10	
3.10	Adequate **electrical outlets and power** are available in every area to permit routine cleaning.	10	
	TOTAL — PLANT MAINTAINABILITY	**100**	

4.0 Building Safety and Security

High School Appraisal — ***200 Points***

	SITE SAFETY	Points Allocated	Points Assigned
4.1	**Student loading areas** are segregated from other vehicular traffic and pedestrian walkways.	15	
4.2	**Access streets** have sufficient signals and signs to permit safe entrance to and exit from school area.	5	
4.3	**Off-site sidewalks** are available for safety of pedestrians.	5	
4.4	**On-site sidewalks** and steps are designed and maintained for safety.	5	
4.5	**Vehicular entrances and exits** permit safe traffic flow.	5	
4.6	**Athletic field equipment** is properly located and free from hazard.	5	
	BUILDING SAFETY		
4.7	The **heating unit(s)** is located away from student occupied areas.	20	
4.8	Multi-story buildings have at least **two stairways**.	15	
4.9	**Exterior doors** open outward and are equipped with panic hardware.	10	
4.10	**Emergency lighting** is provided throughout the building with exit signs on separate electrical circuits.	10	
4.11	**Classroom doors** are recessed and open outward.	10	
4.12	**Building security systems** are provided to assure uninterrupted operation of the educational program.	10	
4.13	**Flooring** (including ramps and stairways) is maintained in a nonslip condition.	5	

4.14	**Stair risers** (interior and exterior) do not exceed 6 1/2 inches and range in number from 3 - 16.	5	_____
4.15	**Glass** is properly located and protected with wire or safety material to prevent accidental student injury.	5	_____
4.16	**Fixed projections** in the traffic areas do not extend more than eight inches from the corridor wall.	5	_____
4.17	**Traffic areas** terminate at an exit or a stairway leading to an egress.	5	_____

EMERGENCY SAFETY

4.18	Adequate **fire safety equipment** is properly located.	15	_____
4.19	There are at least **two independent exits** from any point in the building.	10	_____
4.20	Stairways and exits are of **noncombustible material**.	10	_____
4.21	**Fire-resistant materials** are used throughout the structure.	10	_____
4.22	Automatic and manual **emergency alarm system** with a distinctive sound and flashing light is provided.	10	_____
4.23	Ample space is provided in **corridors or protected areas** for student safety in the event of natural disasters.	5	_____
	TOTAL — BUILDING SAFETY AND SECURITY	**200**	

5.0 Educational Adequacy

High School Appraisal — ***200 Points***

	ACADEMIC LEARNING SPACE	Points Allocated	Points Assigned
5.1	**Size of academic learning areas** meets desirable standards.	10	
5.2	**Classroom space** permits arrangements for small group activity.	5	
5.3	**Location of academic learning areas** is near related educational activities and away from disruptive noise.	10	
5.4	**Personal space** in the classroom away from group instruction allows privacy time for individual students.	5	
5.5	**Storage for student materials** is adequate.	5	
5.6	**Storage for teacher materials** is adequate.	5	
	SPECIAL LEARNING SPACE		
5.7	**Size of special learning area(s)** meets standards.	15	
5.8	**Design of special learning area(s)** is compatible with instructional need.	10	
5.9	**Library/Resource/Media Center** provides appropriate and attractive space.	15	
5.10	**Gymnasium and out-door facilities** adequately serve physical education instruction.	15	
5.11	**Science program** is provided sufficient space and equipment.	10	
5.12	**Music Program** is provided adequate sound-treated space.	10	
5.13	**Space for art** is appropriate for special instruction, supplies, and equipment.	10	

5.14	**Space for technology education**, including computer labs, permits use of state-of-the-art equipment.	10	_____
5.15	Space adjacent to classrooms is provided for **small groups and remedial instruction.**	5	_____
5.16	**Storage for student and teacher material** is adequate.	5	_____

SUPPORT SPACE

5.17	**Teachers' lounge and work areas** reflect teachers as professionals.	10	_____
5.18	**Cafeteria/cafetorium** is attractive with sufficient space for delivery, storage, and food preparation.	10	_____
5.19	**Administrative offices** provide an appearance consistent with the maturity of the students served.	10	_____
5.20	**Counselor's office** insures privacy and sufficient storage.	10	_____
5.21	**Clinic** is near administrative offices and is equipped to meet requirements.	5	_____
5.22	**Suitable reception space** is available for students, teachers, and visitors.	5	_____
5.23	**Administrative personnel** are provided sufficient work space and privacy.	5	_____
	TOTAL — EDUCATIONAL ADEQUACY	**200**	

6.0 Environment for Education

High School Appraisal — ***200 Points***

	EXTERIOR ENVIRONMENT	Points Allocated	Points Assigned
6.1	Overall **design is aesthetically pleasing** to age of students.	15	
6.2	Site and building are **well landscaped**.	10	
6.3	**Exterior noise and poor environment** do not disrupt learning.	10	
6.4	**Entrances and walkways** are **sheltered** from sun and inclement weather.	10	
6.5	**Building materials** provide attractive color and texture.	5	
	INTERIOR ENVIRONMENT		
6.6	**Color schemes, building materials, and decor** provide an impetus to learning.	20	
6.7	**Year around comfortable temperature** is provided throughout the building.	15	
6.8	**Ventilating system** provides adequate circulation of clean air.	15	
6.9	**Lighting system** provides proper intensity, diffusion, and distribution of illumination.	15	
6.10	**Drinking fountains and restroom facilities** are conveniently located.	15	
6.11	**Communication among students** is enhanced by commons area(s) for socialization.	10	
6.12	**Traffic flow** is aided by appropriate foyers and corridors.	10	
6.13	**Areas for students to interact** are suitable to the age group.	10	

6.14	**Large group areas are designed** for effective management of students.	10	_____
6.15	**Acoustical treatment** of ceilings, walls, and floors provides effective sound control.	10	_____
6.16	**Window design** contributes to a pleasant environment.	10	_____
6.17	**Furniture and equipment** provide a pleasing atmosphere.	10	_____
	TOTAL — ENVIRONMENT FOR EDUCATION	**200**	

Justification for Allocation of Points

Middle School Appraisal

Building Name and Level:

Indicate the justification for the appraisal decision in the space provided.

Building features that clearly exceed criteria:

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